SLV-SE10/SE20/SE25/SE30/SE40/SE45/SX10/SX25/SX40
RMT-V256/V256A/V257/V257A/V257B/V257C/V259

SERVICE MANUAL

AEP Model
SLV-SE10AE1/SE10AE2

UK Model
SLV-SE20UX/SE30UX/SE45UX

French Model
SLV-SE25B/SE40B

German Model
SLV-SE20VP1/SE20VP2/SE25VC
/SE30VC1/SE30VC2/SE40VC1
/SE40VC2/SE45VC/SX25VC

Spanish Model
SLV-SE25CP/SE30CP/SE40CP/SE45CP

East European Model

Greek Model
SLV-SE10EE/SE10EG/SE30EE/SE40EE/
SE40EG/SX10EG/SX40EG

Irish Model
SLV-SE20EX

Photo: SLV-SE45
RMT-V259

VHS

S MECHANISM

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT Ⅵ for MECHANICAL ADJUSTMENTS. (9-921-647-11)

SPECIFICATIONS

System

Channel coverage(10EE/EG/30EE/40EE/EG/X10/X40 MODEL)
PAL(B/G,D/K):
VHF E2 to E12,R1 to R12
UHF E21 to E69,R21 to R69
CATV S1 to S41,S01 to S05

PAL(B/G):(10AE1/AE2/40B/25B/45CP/30CP/VC1/VC2/20VP1/VP2/25CP/VC/40CP/VC1/VC2/45VC/X25 MODEL)
VHF E2 to E12
VHF Italian channels A to H
UHF E21 to E69
CATV S01 to S05,S1 to S20
HYPER S21 to S41

SECAM(L):(SE25B/40B MODEL)
VHF F2 to F10
UHF F21 to F69
CATV B to Q
HYPER S21 to S41
PAL(B/G):
VHF E2 to E12
VHF Italian channels A to H
UHF E21 to E69
CATV S01 to S05,S1 to S20
HYPER S21 to S41

PAL (I)(20EX/UX MODEL)
VHFIA to IJ,SA10 to SA13(20EX only)
UHF B21 to B69
CATV S01 to S05,S1 to S20(20EX only)
HYPER S21 to S41

PAL (I)(SE30UX/45UX MODEL)
UHF B21 to B69

RF output signal
UHF channels 21 to 69
Aerial out
75-ohm asymmetrical aerial socket

Inputs and outputs
LINE-1
(TV)
21-pin
Video input: pin 20
Audio input: pins 2 and 6
Video output: pin 19
Audio output: pins 1 and 3

LINE-2 IN(10EE/30CP/VC1/VC2/EE/UX/45CP/UX MODEL)
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p,
75 ohms, unbalanced,sync negative
AUDIO IN,
phono jack (1)
Input level: 327 mVrms
Input impedance : more than 47 kilohms

LINE-2 IN(SE25VC/40VC1 MODEL)
21-pin
Video input: pin 20
Audio input: pins 2 and 6

LINE-2 IN
(25B/CP/VC/UX/40B/CP/VC1/VC2/45VC/UX/X25 MODEL)
LINE-3 IN
(30CP/VC1/UX/VC2/45CP/UX)
21-pin
Video input: pin 20
Audio input: pins 2 and 6

LINE OUT(10EE/30EE/40EE)
AUDIO OUT,Phono jack(2)
Rated output level:327mVrms
Load impedance:47 kilohms
Output impedance:less than 10 kilohms
VIDEO OUT,Phono jack(1)
Rated output level:327mVrms
Load impedance:47 kilohms
Output impedance:less than 10 kilohms

General

Power requirements
220 - 240 V AC, 50 Hz
Power consumption
22 W
Operating temperature
5°C to 40°C
Storage temperatur
-20°C to 60°C
Dimensions
Approx. 355 x 96 x 285 mm(w/h/d)
including projecting parts and controls
Mass
Approx. 3.8 kg
(Approx. 10 lb 2 oz)

Supplied accessories

Remote commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
AC Plug adaptor(1)(20EX/UX)

Design and specifications are subject to change without notice.

VIDEO CASSETTE RECORDER

MICROFILM

SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

FEATURE DIFFERENCE

MODEL NAME		SE10AE1	SE10AE2	SE10EE	SE10EG	SE20EX	SE20UX	SE20VP1	SE20VP2	SE25B
BASE	4Head VIDEO									
	LP REC					○	○			
	NTSC (REC/PB)			×/○	×/○	×/○	×/○	×/○	×/○	×/○
	PAL (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
	SECAM(REC/PB)									○/○
	ME-SECAM(REC/PB)			○/○	○/○					×/○
	BODY COLOR(TV BLACK)					○	○			
PANEL	SOCCER	○	○	○	○	○	○	○	○	○
	CLICK SHUTTLE									
	CLICK SHUTTLE(JOG)									
SW	NT PB ON PAL TV/4.43PB			○2	○2	○2	○2	○2	○2	○2
	RF OFF	○ OSD	○ OSD		○ OSD	○ OSD	○ OSD	○ OSD	○ OSD	○ OSD
	SIMULATED STEREO									
I/O	LINE1 RCA or EUR	EUR	EUR	RCA	EUR	EUR	EUR	EUR	EUR	EUR
	FRONT IN									
	EUR IN (2nd)									
	C+ (2nd)									○ (SW, C+)
MEDIA	SMARTLINK					○	○	○	○	○
	VCR+/G-code/Show V/V+					VPLUS	VPLUS	ShowV	ShowV	ShowV
	ACS (Δ : ACA)						○	Δ	Δ	○
	PDC/VPS					PDC/VPS	PDC/VPS	PDC/VPS	PDC/VPS	PDC/VPS
	ITP					○	○	○	○	○
	AUTO LONG PLAY					○	○			
	SECURITY FUNCTION					○	○			
	CTL MUTE	○	○	×	×	○	○	○	○	○
VIDEO	APC	2○	2○	2○	2○	2○	2○	2○	2○	2○
	LONG LIFE HEAD	○	○	○	○			○	○	○
TUNER	SYSTEM 1	BG	BG	DK	DK	I	I	BG	BG	L
	STEREO									
	SYSTEM 2			BG	BG					BG
	CATV	○	○	○	○	○		○	○	○
	RF OUT SYS	G	G	K/G	K/G	I	I	G	G	L/G
	CH	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL
	CH	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69
AUDIO	SIMULATED STEREO									
FUNCTION	POWER SAVE(OSD)	○	○		○	○	○	○	○	○
	INDEX SEARCH(RMT)									
ACCESSORY	AC Plug Adaptor					○	○			
REMOTE COMMANDER		RMT-V256	RMT-V256	RMT-V256	RMT-V256	RMT-V257B	RMT-V257B	RMT-V257	RMT-V257	RMT-V257A

MODEL NAME		SE25CP	SE25VC	SE30CP	SE30EE	SE30UX	SE30VC1	SE30VC2	SE40B	SE40CP
BASE	4Head VIDEO								○	○
	LP REC	○	○	○		○	○	○	○	○
	NTSC (REC/PB)	×/○	×/○	×/○	×/○	×/○	×/○	×/○	×/○	×/○
	PAL (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
	SECAM(REC/PB)								○/○	
	ME-SECAM(REC/PB)				○/○				×/○	
	BODY COLOR(TV BLACK)					○				
PANEL	SOCCER	○	○	○		○	○	○	○	○
	CLICK SHUTTLE				○					
	CLICK SHUTTLE(JOG)									
SW	NT PB ON PAL TV/4.43PB	○2	○2	○2	○2	○2	○2	○2	○2	○2
	RF OFF	○ OSD	○ OSD	○ OSD		○ OSD	○ OSD	○ OSD	○ OSD	○ OSD
	SIMULATED STEREO				○					
I/O	LINE1 RCA or EUR	EUR	EUR	EUR	RCA	EUR	EUR	EUR	EUR	EUR
	FRONT IN			○	○	○	○	○		
	EUR IN (2nd)					○				
	C+ (2nd)	○ (SW, C+)	○ (SW, C+)	○ (SW, C+)			○ (SW, C+)	○ (SW, C+)	○ (SW, C+)	○ (SW, C+)
MEDIA	SMARTLINK	○	○	○		○	○	○	○	○
	VCR+/G-code/Show V/V+	ShowV	ShowV	ShowV		VPLUS	ShowV	ShowV	ShowV	ShowV
	ACS (△ : ACA)		△			○	△	△	○	
	PDC/VPS		PDC/VPS			PDC/VPS	PDC/VPS	PDC/VPS	PDC/VPS	
	ITP		○			○	○	○	○	
	AUTO LONG PLAY	○	○	○		○	○	○	○	○
	SECURITY FUNCTION					○				
	CTL MUTE	○	○	○	×	○	○	○	○	○
VIDEO	APC	2○	2○	2○	2○	2○	2○	2○	3○	3○
	LONG LIFE HEAD				○					
TUNER	SYSTEM 1	BG	BG	BG	DK	I	BG	BG	L	BG
	STEREO									
	SYSTEM 2				BG				BG	
	CATV	○	○	○	○		○	○	○	○
	RF OUT SYS	G	G	G	K/G	I	G	G	L/G	G
	CH	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL
	CH	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69
AUDIO	SIMULATED STEREO				○					
FUNCTION	POWER SAVE(OSD)	○	○	○		○	○	○	○	○
	INDEX SEARCH(RMT)			○		○	○	○		
ACCESSORY	AC Plug Adaptor					○				
REMOTE COMMANDER		RMT-V257B	RMT-V257B	RMT-V259	RMT-V256	RMT-V259	RMT-V259	RMT-V259	RMT-V257C	RMT-V257B

MODEL NAME		SE40EE	SE40EG	SE40VC1	SE40VC2	SE45CP	SE45UX	SE45VC	SX10EG	SX25VC	SX40EG
BASE	4Head VIDEO	○	○	○	○	○	○	○			○
	LP REC	○	○	○	○	○	○	○		○	○
	NTSC (REC/PB)	×/○	×/○	×/○	×/○	×/○	×/○	×/○	×/○	×/○	×/○
	PAL (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
	SECAM(REC/PB)										
	ME-SECAM(REC/PB)	○/○	○/○						○/○		○/○
	BODY COLOR (TV BLACK)						○		○		○
PANEL	SOCCER	○	○	○	○				○	○	○
	CLICK SHUTTLE										
	CLICK SHUTTLE(JOG)					○	○	○			
SW	NT PB ON PAL TV/4.43PB	○2	○2	○2	○2	○2	○2	○2	○2	○2	○2
	RF OFF		○ OSD	○ OSD	○ OSD	○ OSD	○ OSD	○ OSD	○ OSD	○ OSD	○ OSD
	SIMULATED STEREO										
I/O	LINE1 RCA or EUR	RCA	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR
	FRONT IN					○	○	○			
	EUR IN (2nd)						○				
	C+ (2nd)			○ (SW, C+)	○ (SW, C+)	○ (SW, C+)		○ (SW, C+)		○ (SW, C+)	
MEDIA	SMARTLINK		○	○	○	○	○	○		○	
	VCR+/G-code/Show V/V+		ShowV	ShowV	ShowV	ShowV	VPLUS	ShowV		ShowV	
	ACS (△ : ACA)		△	△	○		○	△		△	
	PDC/VPS		PDC/VPS	PDC/VPS	PDC/VPS		PDC/VPS	PDC/VPS		PDC/VPS	
	ITP		○	○	○		○	○		○	
	AUTO LONG PLAY	○	○	○	○	○	○	○		○	○
	SECURITY FUNCTION						○				
	CTL MUTE	×	×	○	○	○	○	○	×	○	×
VIDEO	APC	3○	3○	3○	3○	3○	3○	3○	2○	2○	3○
	LONG LIFE HEAD								○		
TUNER	SYSTEM 1	DK	DK	BG	BG	BG	I	BG	DK	BG	DK
	STEREO										
	SYSTEM 2	BG	BG						BG		BG
	CATV	○	○	○	○	○		○	○	○	○
	RF OUT SYS	K/G	K/G	G	G	G	I	G	K/G	G	K/G
	CH	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL	PLL
	CH	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69	21 to 69
AUDIO	SIMULATED STEREO										
FUNCTION	POWER SAVE(OSD)		○	○	○	○	○	○	○	○	○
	INDEX SEARCH(RMT)					○	○	○			
ACCESSORY	AC Plug Adaptor						○				
REMOTE COMMANDER		RMT-V256A	RMT-V257B	RMT-V257B	RMT-V257B	RMT-V259	RMT-V259	RMT-V259	RMT-V256	RMT-V257B	RMT-V257B

TABLE OF CONTENTS

SERVICE NOTE

1. ERROR CODE INDICATION ····· 7

1. GENERAL

Getting Started

Unpacking ····· 1-1
Setting up the remote commander ····· 1-1
Connecting the VCR ····· 1-2
Setting up the VCR with the Auto Set Up function ····· 1-3
Tuning your TV to the VCR ····· 1-3
Selecting a language ····· 1-4
Presetting channels ····· 1-4
Changing/disabling programme positions ····· 1-5
Setting the clock ····· 1-6
Setting your personal code ····· 1-8

Basic Operations

Playing a tape ····· 1-8
Recording TV programmes ····· 1-9
Recording TV programmes using the VIDEO Plus+ system ····· 1-10
Setting the timer manually ····· 1-11

Additional Operations

Playing/searching at various speeds ····· 1-12
Setting the recording duration time ····· 1-13
Checking/changing/cancelling timer settings ····· 1-13
Searching using the Smart Search function ····· 1-14
Seatching using the index function ····· 1-14
Adjusting the picture ····· 1-15
Changing menu options ····· 1-15
Editing with another VCR ····· 1-16

Additional Information

Index to parts and controls ····· 1-17

2. DISASSEMBLY

2-1. CASE, FRONT PANEL BLOCK ASSEMBLY ····· 2-1
2-2. FI-15 BOARD, DM-83 BOARD ····· 2-6
2-3. REAR PANEL ····· 2-2
2-4. POWER BLOCK, MA-338 BOARD (WITH S MECHANISM DECK) ····· 2-2
2-5. S MECHANISM DECK ····· 2-3
2-6. INTERNAL VIEWS ····· 2-4
2-7. CIRCUIT BOARDS LOCATION ····· 2-5

3. BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM ····· 3-1
3-2. VIDEO BLOCK DIAGRAM ····· 3-2
3-3. SERVO/SYSTEM CONTROL/TUNER BLOCK DIAGRAM ····· 3-3
3-4. AUDIO BLOCK DIAGRAM ····· 3-4
3-5. POWER BLOCK DIAGRAM ····· 3-4

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAM SCHEMATIC DIAGRAM ····· 4-3
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS ····· 4-5

- MA-338 (VIDEO, AUDIO, SERVO/SYSTEM CONTROL,TUNER) PRINTED WIRING BOARD ···· 4-5
- MA-338 (1/9) (REC/PB) SCHEMATIC DIAGRAM ··· 4-7
- MA-338 (2/9) (VIDEO/AUDIO) SCHEMATIC DIAGRAM ····· 4-9
- MA-338 (3/9) (AUDIO) SCHEMATIC DIAGRAM ·· 4-11
- MA-338 (4/9) (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM ····· 4-13
- MA-338 (5/9) (DISPLAY) SCHEMATIC DIAGRAM ····· 4-15
- MA-338 (6/9) (INPUT/OUTPUT) SCHEMATIC DIAGRAM ····· 4-17
- MA-338 (7/9) (TUNER) SCHEMATIC DIAGRAM ····· 4-19
- MA-338 (8/9) (POWER SUPPLY) SCHEMATIC DIAGRAM ····· 4-21
- MA-338 (9/9) (SECAM VIDEO PROCESSOR) SCHEMATIC DIAGRAM ····· 4-23
- FI-15 (LINE-2 IN) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ····· 4-25
- DS-83 (DUAL SHATTLE) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ····· 4-26
- POWER BLOCK ETXNY165E1D (SWITCHING REGURATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ····· 4-27

5. INTERFACE, IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL — VIDEO/RP BLOCK INTERFACE (MA-338 BOARD IC162) ····· 5-1
5-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-338 BOARD IC162) ····· 5-1
5-3. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-338 BOARD IC162) ····· 5-2
5-4. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUITE INTERFASE (MA-338 BOARD IC162) ····· 5-2
5-5. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-338 BOARD IC162) ····· 5-2
SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTIONS (MA-338 BOARD IC162) ····· 5-3
MODE CONTROL PIN FUNCTIONS (MA-338 BOARD IC420) ····· 5-5

6. ADJUSTMENTS

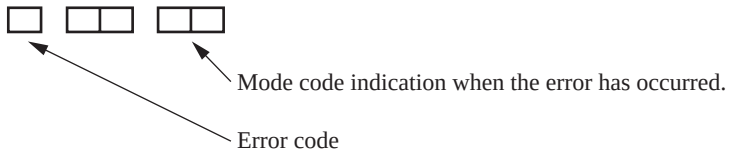
6-1 MECHANICAL ADJUSTMENTS ····· 6-1
6-2. ELECTRICAL ADJUSTMENTS ····· 6-1
2-1. PREPARATION BEFORE ADJUSTMENT ····· 6-1
2-1-1. Equipment Required ····· 6-1
2-1-2. Equipment Connection ····· 6-1
2-1-3. Set-up of Adjustment ····· 6-1
2-1-4. Alignment Tape ····· 6-1
2-1-5. Input/Output Levels and Impedance ····· 6-2
2-1-6. Adjustment Sequence ····· 6-2
2-2. POWER SUPPLY CHECK ····· 6-2
2-2-1. Output Voltage Check (MA-338 Board) ····· 6-2
2-3. SERVO SYSTEM CHECK ····· 6-3
2-3-1. RF Switching Position Adjustment (MA-338 Board) ····· 6-3
2-4. AUDIO SYSTEM ADJUSTMENT ····· 6-3
2-4-1. Normal Audio System Adjustment ····· 6-3
2-4-2. ACE Head Adjustment ····· 6-3
2-4-3. E-E Output Level Check ····· 6-3
2-4-4. Frequency Response Check ····· 6-3
2-5. ADJUSTING PARTS LOCATION DIAGRAM ····· 6-4

7. REPAIR PARTS LIST

7-1 EXPLODED VIEWS ····· 7-1
7-1-1. FRONT PANEL AND UPPER CASE SECTION ····· 7-1
7-1-2. CHASSIS SECTION ····· 7-2
7-1-3. MECHANISM DECK SECTION-1 ····· 7-3
7-1-4. MECHANISM DECK SECTION-2 ····· 7-4
7-1-5. MECHANISM DECK SECTION-3 ····· 7-5
7-2. ELECTRICAL PARTS LIST ····· 7-6

1. ERROR CODE INDICATION

- Error codes are indicated using the lower 5 digits in the fluorescent display tube.
  "At this time, Colon ":" between character is not indicated."



ERROR CODE

0	No error
1	Cam encoder error Loading direction
2	Cam encoder error Unloading direction
3	T reel error
4	S reel error
5	Capstan error
6	Drum error
7	Error on initializing
8	Cassette loading error
9	Reserve

MODE CODE

0	Power-on eject	10	FWD x1	20	REW play
1	Power-on initial	11	FWD x2	21	Cas. loading
2	Power-off eject	12	CUE	22	Tape loading
3	Power-off stop	13	PB-pause	23	Power-off loading
4	FF	14	RVS-pause	24	Mecha. error (Power on)
5	REW	15	RVS x1	25	Power-on eject initial
6	REC	16	RVS x2	26	Power-off eject initial
7	REC- pause	17	REV	27	APC REC
8	Power-on stop	18	Power-off initial	28	Cas. loading
9	PB	19	Mecha. error (Power off)		(No auto PB check)

SECTION 1
GENERAL

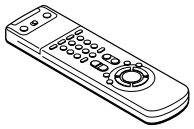
This section is extracted from instruction manual.

Step 1

Unpacking

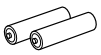
Check that you have received the following items with the VCR:

- Remote commander



- Aerial cable

- R6 (size AA) batteries



Checking your model name

The instructions in this manual are for the 2 models: SLV-SE30UX and SE45UX. Check your model number by looking at the rear panel of your VCR. The SLV-SE30UX is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "SLV-SE45UX only."

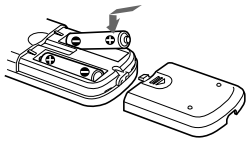
Step 2

Setting up the remote commander

Inserting the batteries

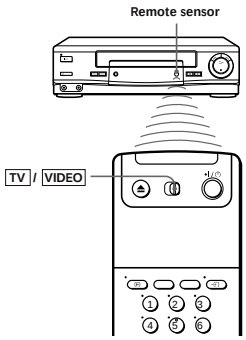
Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

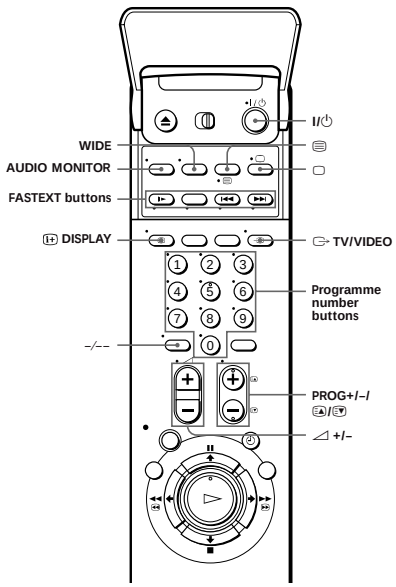
You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ⊡ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV / VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

continued

Step 2 : Setting up the remote commander (continued)



TV control buttons

To	Press
Turn the TV into standby mode	I/⏻
Select an input source of the TV either from aerial in or from line in	TV/VIDEO
Select the programme position of the TV	Programme number buttons, –/––, PROG +/–
Adjust the volume of the TV	+/–

To	Press
Switch to TV (Teletext off)	(TV)
Switch to Teletext	(Teletext)
Select the sound	AUDIO MONITOR
Use FASTEXT	FASTEXT buttons
Call up on-screen display	DISPLAY
Change the Teletext page	/
Switch to / from wide mode of a Sony wide TV (For other manufacture's wide TV, see "Controlling other TVs with the remote commander" below.)	WIDE

Notes

- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one together.
- Do not use different types of batteries together.
- Some buttons may not work with certain Sony TVs.

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV / VIDEO at the top of the remote commander to TV.
2 Hold down I/⏻, and enter your TV's code number(s) using the programme number buttons. Then release I/⏻.

Now you can use the following TV control buttons to control your TV: I/⏻, TV/VIDEO, programme number buttons, –/––, PROG +/–, +/–, (TV), (Teletext), FASTEXT buttons, WIDE*, MENU*, *, *, *, *, and OK*.

* These buttons may not work with all TVs.

Tip

- When you set your TV's code number correctly while the TV is turned on, the TV turns off automatically.

continued

Step 2 : Setting up the remote commander (continued)

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

To make wide mode settings, see the footnotes below this table for the applicable code numbers.

Manufacturer	Code number
Sony	01*1, 02
Akai	68
Ferguson	52
Grundig	10*1, 11*1
Hitachi	24
JVC	33
Loewe	45
Mivar	09, 70
NEC	66
Nokia	15, 16, 69*3

Manufacturer	Code number
Panasonic	17*1, 49
Philips	06*1, 07*1, 08*1
Saba	12, 13
Samsung	22, 23
Sanyo	25
Sharp	29
Telefunken	36
Thomson	43*2
Toshiba	38

*1 Press WIDE to switch the wide picture mode on or off.
*2 Press WIDE, then press + / – to select the wide picture mode you want.
*3 Press WIDE. The menu appears on the TV screen. Then, press ↑/↓/←/→ to select the wide picture you want and press OK.

Notes

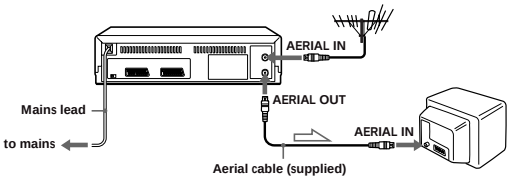
- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number may change. Set the appropriate code number every time you replace the batteries.

Step 3

Connecting the VCR

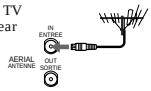
If your TV has a EURO-AV connector, see page 10.

If your TV does not have a EURO-AV (Scart) connector



: Signal flow

1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.



2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.

3 Connect the mains lead to the mains.
If the mains plug does not fit in the mains, use the supplied plug adaptor.

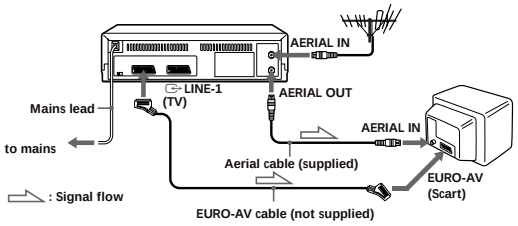
Note

- When you connect the VCR and your TV only with an aerial cable, you have to set RF MODULATOR in the OPTIONS-2 menu to ON (initial setting) (see page 63).

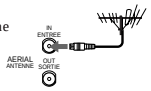
continued

Step 3 : Connecting the VCR (continued)

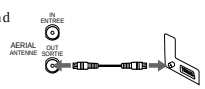
If your TV has a EURO-AV (Scart) connector



1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.

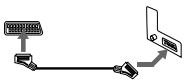


2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.



3 Connect LINE-1 (TV) on the VCR and the EURO-AV (Scart) connector on the TV with the optional EURO-AV cable.

This connection improves picture and sound quality. Whenever you want to watch the VCR picture, press ⇦ TV / VIDEO to display the VIDEO indicator in the display window.



4 Connect the mains lead to the mains.
If the mains plug does not fit in the mains, use the supplied plug adaptor.

Note

- If the TV is connected to the LINE-1 (TV) connector, setting the RF MODULATOR in the OPTIONS-2 menu to OFF is recommended. In the OFF position, only the signal from the aerial is output through the AERIAL OUT connector (see page 63). You do not have to tune your TV to the VCR. Skip "Tuning your TV to the VCR" on page 14.

About the SMARTLINK features

SMARTLINK

If the connected TV complies with SMARTLINK, MEGALOGIC*1, EASYLINK*2, Q-Link*3, or EURO VIEW LINK*4, you can use the SMARTLINK function after you complete the steps on the previous page (the SMARTLINK indicator appears in the VCR's display window when you turn on the TV). You can enjoy the following SMARTLINK features.

- Preset Download
  You can download your TV tuner preset data to this VCR and tune the VCR according to that data in Auto Set Up. This greatly simplifies the Auto Set Up procedure. Be careful, not to disconnect the cables or exit the Auto Set Up function during the procedure.

  See "Setting up the VCR with the Auto Set Up function" on page 13.

continued

Step 3 : Connecting the VCR (continued)

- TV Direct Rec
  You can easily record what you are watching on the TV (other than tapes being played on this VCR). For details, see “Recording what you are watching on the TV (TV Direct Rec)” on page 41.
- One Touch Play
  With One Touch Play, you can start playback automatically without turning on the TV. For details, see “Starting playback automatically with one button (One Touch Play)” on page 36.
- One Touch Menu
  You can turn on the VCR and TV, set the TV to the video channel, and display the VCR’s on-screen display automatically by pressing MENU on the remote commander.
- One Touch Timer
  You can turn on the VCR and TV, set the TV to the video channel, and display the timer recording menu (the TIMER METHOD menu, the TIMER menu, or the VIDEO PLUS+ menu) automatically by pressing ⏲ TIMER on the remote commander.

  You can set which timer recording menu is displayed using TIMER OPTIONS in the OPTIONS-2 menu (see page 63).

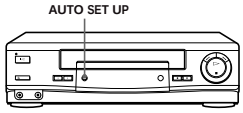
*1 “MEGALOGIC” is a registered trademark of Grundig Corporation.
*2 “EASYLINK” is a trademark of Philips Corporation.
*3 “Q-Link” is a trademark of Panasonic Corporation.
*4 “EURO VIEW LINK” is a trademark of Toshiba Corporation.

Note
- Not all the TVs respond to the functions above.

Step 4

Setting up the VCR with the Auto Set Up function

Before using the VCR for the first time, set up the VCR using the Auto Set Up function. With this function, you can set TV channels, guide channels for the VIDEO Plus+ system, the RF channel, and VCR clock automatically.



AUTO SET UP

Hold down AUTO SET UP on the VCR for more than three seconds.

The VCR automatically turns on and VCR starts searching for all of the receivable channels and presets them in the appropriate order for your local area.

If you use the SMARTLINK connection, the Preset Download function starts and the SMARTLINK indicator flashes in the display window during download.

After the search is complete, the current time appears in the display window for any stations that transmit a time signal. If the time does not appear, set the clock manually. See page 27.

To cancel the Auto Set Up function

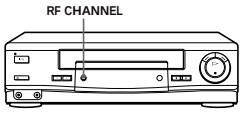
Press AUTO SET UP.

Note
- Do not cancel the Auto Set Up function. If you do, repeat the step above.

Step 5

Tuning your TV to the VCR

If you have connected the VCR to your TV using the EURO-AV cable, skip this step.

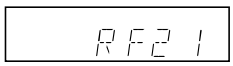


1 RF CHANNEL

Press RF CHANNEL on the VCR.

The factory-preset RF channel appears in the display window.

The VCR signal is output through this channel to the TV.



2

Turn on your TV and select a programme position for the VCR picture.

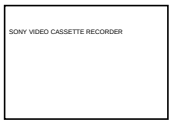
This programme position will now be referred to as the video channel.

3

Tune the TV to the same channel as that shown in the display window so that the picture on the right appears clearly on the TV screen.

Refer to your TV manual for tuning instructions.

If the picture does not appear clearly, see “To obtain a clear picture from the VCR” below.



4 RF CHANNEL

Press RF CHANNEL.

You have now tuned your TV to the VCR. Whenever you want to play a tape, set the TV to the video channel.

To check to see if the TV tuning is correct

Set the TV to the video channel and press PROGRAM +/– on the VCR. If the TV screen changes to a different programme each time you press PROGRAM +/–, the TV tuning is correct.

To obtain a clear picture from the VCR

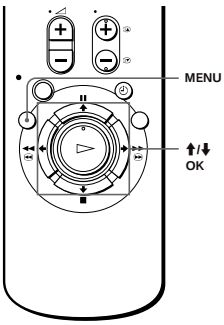
If the screen does not appear clearly in step 3 above, press PROGRAM +/–, so that another RF channel appears. Then tune the TV to the new RF channel until a clear picture appears.

Selecting a language

If you prefer an on-screen language other than English, use the on-screen display to select another language.

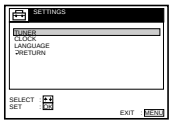
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



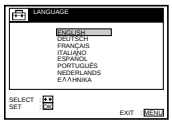
1 MENU

Press MENU, then press ↑/↓ to highlight SETTINGS and press OK.



2

Press ↑/↓ to highlight LANGUAGE, then press OK.



3

Press ↑/↓ to highlight the desired language, then press OK.

4 MENU

Press MENU to exit the menu.

Tip

- If you want to return to the previous menu, highlight RETURN and press OK.

Note

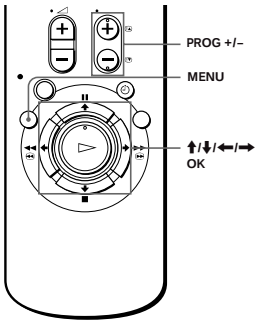
- The menu disappears automatically if you don't proceed for more than a few minutes.

Presetting channels

If some channels could not be preset using the Auto Set Up function, you can preset them manually.

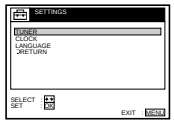
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



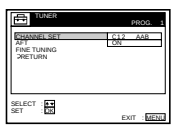
1 MENU

Press MENU, then press ↑/↓ to highlight SETTINGS and press OK.



2

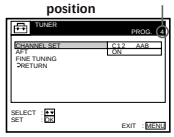
Press ↑/↓ to highlight TUNER, then press OK.



3 • PROG

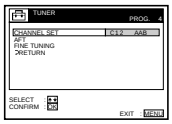
Press PROG +/– to select the programme position.

Selected programme position



4

Press ↑/↓ to highlight CHANNEL SET, then press OK.



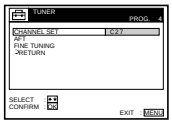
5

Press ↑/↓ repeatedly until the channel you want is displayed.

The channels appear in the following order:

- UHF B21 - B69

If you know the number of the channel you want, press the programme number buttons. For example, for channel 5, first press "0" and then press "5."



6

To allocate another channel to another programme position, repeat steps 3 and 5.

7 MENU

Press MENU to exit the menu.

Disabling unwanted programme positions

After presetting channels, you can disable unused programme positions. The disabled positions will be skipped later when you press the PROG +/– buttons.

1 In step 5 above, press programme number button "0" twice to display the number "00" beside CHANNEL SET.

2 Press MENU to exit the menu.

continued

If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture is not clear, you may also use the manual tuning function.

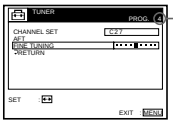
1 Press PROG + /– or the programme number buttons to select the programme position for which you cannot obtain a clear picture.

2 Press MENU, then select SETTINGS and press OK.

3 Select TUNER, then press OK.

4 Select FINE TUNING, then press OK.

The fine tuning meter appears.



Selected programme position

5 Press ⬅ / ➡ to get a clearer picture, then press MENU to exit the menu.

Note that the AFT (Auto Fine Tuning) setting switches to OFF.

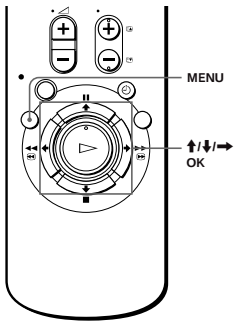
Tip

- If you want to return to the previous menu, highlight RETURN and press OK.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

Changing/ disabling programme positions



After setting the channels, you can change the programme positions and the station names as you like. If any programme positions are unused or contain unwanted channels, you can disable them. If the station names are not displayed, you can enter them manually (see page 23).

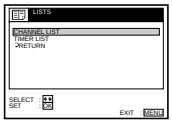
Changing programme positions

Before you start…

- Turn on the VCR and the TV.
- Set the TV to the video channel.

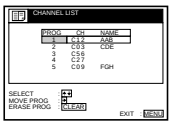
1 MENU

Press MENU, then press ↑ / ↓ to highlight LISTS and press OK.



2

Press ↑ / ↓ to highlight CHANNEL LIST, then press OK.

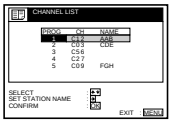


continued

3

Press ↑ / ↓ to highlight the row on which you want to change the programme position, then press ➡.

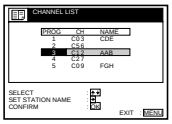
To display other pages for programme positions 6 to 60, press ↑ / ↓ repeatedly.



4

Press ↑ / ↓ until the selected channel row moves to the desired programme position.

The selected channel is inserted at the new programme position and the intermediate channels are displaced to fill the gap.



5

Press OK to confirm the setting.

6 To change the programme position of another station, repeat steps 3 to 5.

7 MENU

Press MENU to exit the menu.

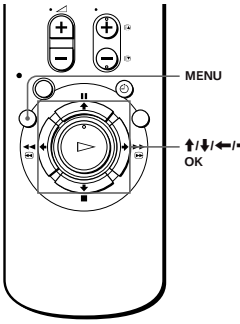
Tip

- If you want to return to the previous menu, highlight RETURN and press OK.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

Changing the station names



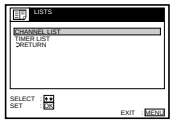
You can change the station names (up to 5 characters).

Before you start…

- Turn on the VCR and the TV.
- Set the TV to the video channel.

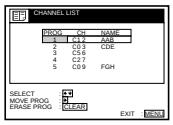
1 MENU

Press MENU, then press ↑ / ↓ to highlight LISTS and press OK.



2

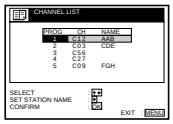
Press ↑ / ↓ to highlight CHANNEL LIST, then press OK.



3

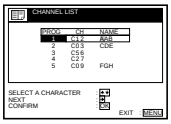
Press ↑ / ↓ to highlight the row on which you want to change the station name, then press ➡.

To display other pages for programme positions 6 to 60, press ↑ / ↓ repeatedly.



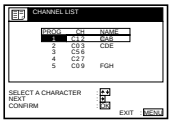
continued

4 Press ➡.



5 Enter the station name.

1 Press ⬆/⬇ to select a character.
Each time you press ⬆, the character changes as shown below.
A → B → ... → Z → a → b → ... → z → 0 → 1 → ... → 9 → (symbols) → (blank space) → A



2 Press ➡ to set the next character.
The next space is highlighted.
To correct a character, press ⬅/➡ until the character you want to correct is highlighted, then reset it.
You can set up to 11 characters for the station name.

6 Press OK to confirm the new name.

7 MENU

Press MENU to exit the menu.

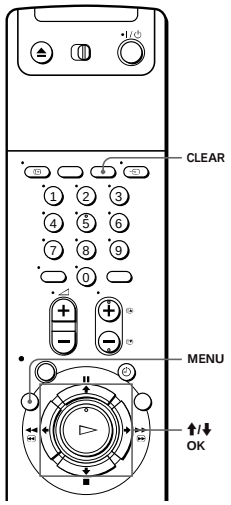
Tip
- If you want to return to the previous menu, highlight RETURN and press OK.

Note
- The menu disappears automatically if you don't proceed for more than a few minutes.

Disabling unwanted programme positions

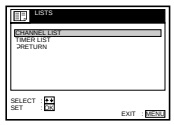
After presetting channels, you can disable unused programme positions. The disabled positions will be skipped later when you press the PROG + / – buttons.

Before you start...
- Turn on the VCR and the TV.
- Set the TV to the video channel.



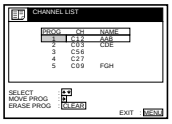
1 MENU

Press MENU, then press ⬆/⬇ to highlight LISTS, and press OK.

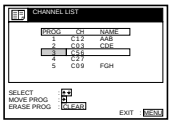


continued

2 Press ⬆/⬇ to highlight CHANNEL LIST, then press OK.

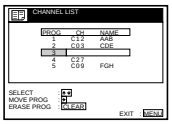


3 Press ⬆/⬇ to highlight the row on which you want to disable.



4 CLEAR

Press CLEAR.
The selected row will be cleared as shown on the right.



5 Repeat steps 3 and 4 for any other programme positions you want to disable.

6 MENU

Press MENU to exit the menu.

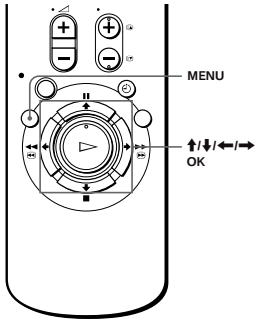
Tip
- If you want to return to the previous menu, highlight RETURN and press OK.

Notes
- The menu disappears automatically if you don't proceed for more than a few minutes.
- Be sure to select the programme position you want to disable correctly. If you disable a programme position by mistake, you need to reset that channel manually.

Setting the clock

You must set the time and date on the VCR to use the timer recording features properly. If the VCR clock was not set in the Auto Set Up procedure, you need to set it manually.

The Auto Clock Set function works only if a station in your area is broadcasting a time signal. If the Auto Set Up function did not set the clock correctly for your local area, try another station for the Auto Clock Set function.

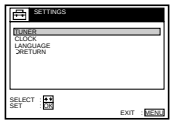


Setting the clock manually

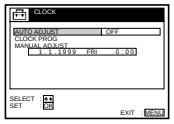
Before you start...
- Turn on the VCR and the TV.
- Set the TV to the video channel.

1 MENU

Press MENU, then press ⬆/⬇ to highlight SETTINGS and press OK.

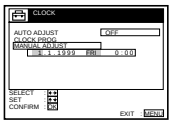


2 Press ⬆/⬇ to highlight CLOCK, then press OK.

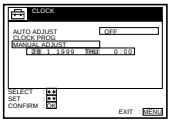


continued

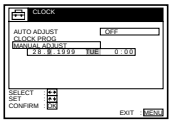
3 Press ↑/↓ to highlight MANUAL ADJUST, then press OK.



4 Press ↑/↓ to set the date.

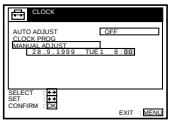


5 Press → to highlight the month and set the month pressing ↑/↓.

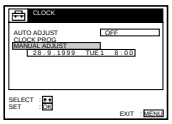


6 Set the year, hour, and minutes in sequence, pressing → to highlight the item to be set, and press ↑/↓ to select the digits.

The day of the week is set automatically.



7 Press OK to start the clock.



8 MENU

Press MENU to exit the menu.

Tips

- To change the digits during setting, press ← to return to the item to be changed, and select the digits pressing ↑/↓.
- If you want to return to the previous menu, highlight RETURN and press OK.

Note

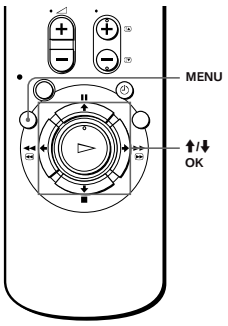
- The menu disappears automatically if you don't proceed for more than a few minutes.

continued

Changing the station for the Auto Clock Set function

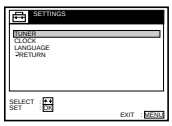
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



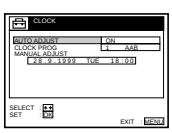
1 MENU

Press MENU, then press ↑/↓ to highlight SETTINGS and press OK.

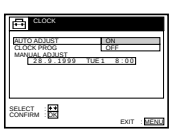


2 Press ↑/↓ to highlight CLOCK, then press OK.

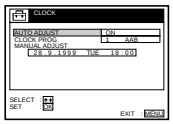
AUTO ADJUST is highlighted.



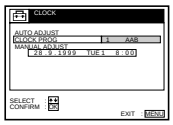
3 Press OK.



4 Press ↑/↓ to highlight ON, then press OK.

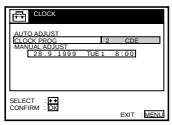


5 Press ↓ to highlight CLOCK PROG, then press OK.



6 Press ↑/↓ repeatedly until the programme position of the station that carries the time signal appears.

If the VCR does not receive the time signal from any station, AUTO ADJUST returns to OFF automatically.



7 MENU

Press MENU to exit the menu.

Tips

- If you set AUTO ADJUST to ON, the Auto Clock Set function is activated whenever the VCR is turned off. The time is adjusted automatically by making reference to the time signal from the station whose programme position is displayed in the "CLOCK PROG" row.
  If you do not need the Auto Clock Set, select OFF.
- If you want to return to the previous menu, highlight RETURN and press OK.

Note

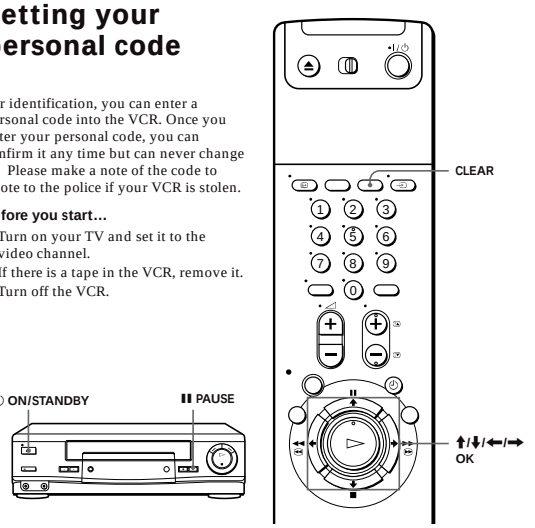
- The menu disappears automatically if you don't proceed for more than a few minutes.

Setting your personal code

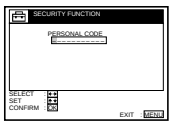
For identification, you can enter a personal code into the VCR. Once you enter your personal code, you can confirm it any time but can never change it. Please make a note of the code to quote to the police if your VCR is stolen.

Before you start…

- Turn on your TV and set it to the video channel.
- If there is a tape in the VCR, remove it.
- Turn off the VCR.

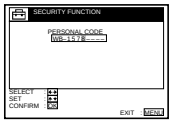


1 Hold down II PAUSE and I/⏻ ON/STANDBY on the VCR simultaneously for more than three seconds.



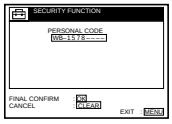
2 Enter your personal code.

1 Press ↑/↓ to select a character.
Each time you press ↑, the character changes as shown below.
A → B → … → Z → 0 → 1 → … → 9 → (blank space) → – (hyphen) → A



2 Press → to set the next character.
The next space is highlighted.
To correct a character, press ←/→ until the character you want to correct is highlighted, then reset it.
You can set up to 11 characters for your personal code.

3 Press OK.
A confirmation screen appears.



4 If the displayed personal code is correct, press OK.
If the displayed personal code is wrong, press CLEAR and continue from step 2.

CLEAR

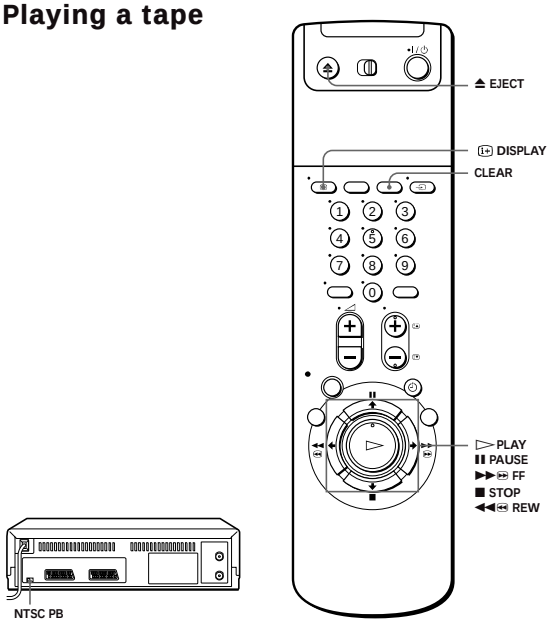
To confirm your personal code

While the VCR is turned off and there is no tape in the VCR, hold down II PAUSE and I/⏻ ON/STANDBY on the VCR simultaneously for more than three seconds. The entered personal code appears on the TV screen. Press any button to enter normal viewing mode.

Note

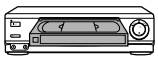
- The menu disappears automatically if you don't proceed for more than a few minutes.

Playing a tape



1 Turn on your TV and set it to the video channel.

2 Insert a tape.
The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.



3 Press ▷ PLAY.
When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Fast-forward the tape	▶▶⏩ FF during stop
Rewind the tape	◀◀⏪ REW during stop
Eject the tape	⏏ EJECT

To play an NTSC-recorded tape

Set NTSC PB at the rear of the VCR according to the colour system of your TV.

When your TV is	Set NTSC PB to
PAL only	ON PAL TV
PAL and NTSC	NTSC 4.43

To use the time counter

At the point on the tape that you want to find later, press CLEAR. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press DISPLAY.

continued

Notes

- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.
- The time counter does not appear on the TV screen when using an NTSC-recorded tape.
- Depending on your TV, the following may occur while playing an NTSC-recorded tape:
  - The picture becomes black and white.
  - The picture shakes.
  - No picture appears on the TV screen.
  - Black streaks appear horizontally on the TV screen.
  - The colour density increases or decreases.
- While setting the menu on the TV screen, buttons for playback on the remote commander do not function.

Starting playback automatically with one button (One Touch Play)

If you use the SMARTLINK connection, you can turn on the VCR and the TV, set the TV to the video channel, and start playback automatically with one button.

1 Insert a tape.

The VCR automatically turns on.

If you insert a tape with its safety tab removed, the TV turns on and switches to the video channel. Playback starts automatically.

2 Press ▷ PLAY.

The TV turns on and switches to the video channel automatically. Playback starts.

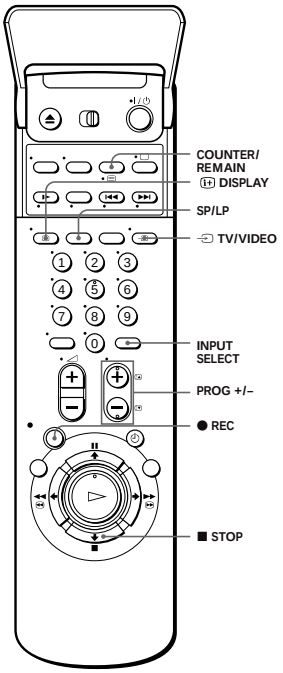
Tip

- When there already is a tape in the VCR, the VCR and the TV turn on, the TV is set to the video channel, and playback starts automatically in one sequence when you press ▷ PLAY.

Note

- When you use the One Touch Play function, leave the TV on or in the standby mode.

Recording TV programmes



1 Turn on your TV and set it to the video channel.

2 Insert a tape with its safety tab in place.

continued

3 INPUT SELECT — Press INPUT SELECT until a programme position number appears in the display window.

4 • PROG — Press PROG + / – to select the programme position you want to record.

5 SP / LP — Press SP / LP to select the tape speed, SP or LP.

LP (Long Play) provides recording time twice as long as SP, however, SP (Standard Play) produces better picture and audio quality.

6 ●REC — Press ● REC to start recording.

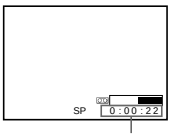
The recording indicator lights up red in the display window.

To stop recording

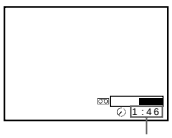
Press ■ STOP.

To check the remaining time

Press DISPLAY. With the display on, press COUNTER / REMAIN to check the remaining time. Each time you press COUNTER / REMAIN, the time counter and the remaining time appear alternately. The remaining time with the ◴ indicator also appears in the display window.



Time counter



Remaining time

To correctly check the remaining time of the tape, set TAPE LENGTH in the OPTIONS-1 menu according to the tape type you use (see page 63).

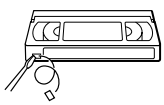
To watch another TV programme while recording

1 Press TV / VIDEO to turn off the VIDEO indicator in the display window.

2 Select another programme position on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.



Safety tab

continued

Tips

- To select a programme position, you can use the programme number buttons on the remote commander. For two-digit numbers, press the –/-- (ten's digit) button followed by the programme number buttons.
- You can select a video source from the LINE-1 (TV) connector, the LINE-2 IN jacks, or the LINE-3 IN (Scart) connector also using the INPUT SELECT button.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV.

Notes

- The display does not appear during still (pause) mode or slow-motion playback.
- The display will not appear while playing an NTSC-recorded tape.
- If a tape has portions recorded in both PAL and NTSC systems, the time counter reading will not be correct. This discrepancy is due to the difference between the counting cycles of the two video systems.
- When you insert a non-standard commercially available tape, the remaining time may not be correct.
- The remaining time is intended for rough measurement only.
- About 30 seconds after the tape begins playback, the tape remaining time will be displayed.

Recording what you are watching on the TV (TV Direct Rec)

If you use the SMARTLINK connection, you can easily record what you are watching on the TV (other than tapes being played on the VCR).

1 Insert a tape with its safety tab in place.

2 Press ● REC while you are watching a TV programme or external source.

The VCR automatically turns on, then the TV indicator lights up and the VCR starts recording what you are watching on the TV.

Tips

- The TV indicator appears in the display window after you press ● REC in some situations such as:
  – when you are watching a source connected to the TV's line input, or
  – when the TV tuner preset data for the programme position is different from the data in the VCR tuner preset.
- If there is a tape with its safety tab in place in the VCR, the VCR automatically turns on and starts recording what you are watching on the TV when you press ● REC.
- You can turn the TV Direct Rec function ON and OFF in the OPTIONS-2 menu (see page 63).

Notes

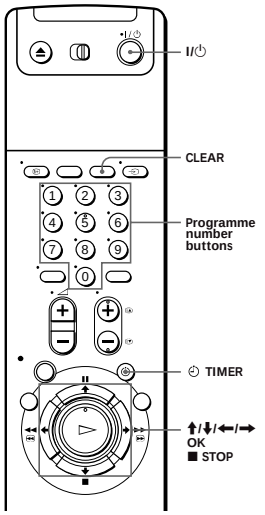
- You cannot record what you are watching using this method when the VCR is in the following modes; pause, timer standby, tuner preset, Auto Set Up, and recording.
- When the TV indicator is lit in the display window, do not turn off the TV nor change the TV programme position. When the TV indicator is not lit, the VCR continues recording the programme even if you change the TV programme position on the TV.

Recording TV programmes using the VIDEO Plus+ system

The VIDEO Plus+ system is the feature that simplifies programming the VCR to make timer recording. Just enter the PlusCode number listed in the TV programme guide. The date, times, and programme position of that programme are set automatically. You can preset up to eight programmes at a time.

Before you start...

- Check that the VCR clock is set to the correct time and date.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.
- Set TIMER OPTIONS to VIDEO PLUS+ or VARIABLE in the OPTIONS-2 menu (see page 63).

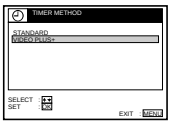


1 TIMER

Press ⏲ TIMER.

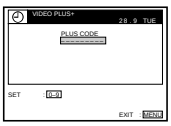
- When you set TIMER OPTIONS to VARIABLE

  The TIMER METHOD menu appears on the TV screen. Press ↑/↓ to select VIDEO PLUS+, then press OK.



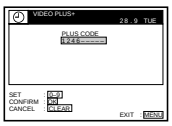
- When you set TIMER OPTIONS to VIDEO PLUS+

  The VIDEO PLUS+ menu appears on the TV screen.



2 0-9

Press the programme number buttons to enter the PlusCode number.



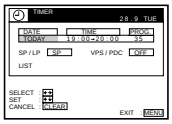
CLEAR

If you make a mistake, press CLEAR and re-enter the correct number.

3 PLAY OK

Press OK.

The date, start and stop times, programme position, tape speed, and VPS/PDC setting appear on the TV screen.



- If "--" appears in the "PROG." (programme) column (this may happen for local broadcasts), you have to set the appropriate programme position manually.

  Press ↑/↓ to select the desired programme position.

  To record from a source connected to the LINE-1 (TV) connector, the LINE-2 IN jacks, or the LINE-3 (Scart) connector, press INPUT SELECT to display "L1", "L2", or "L3."

  You will only have to do this operation once for the referred channel. The VCR will then store your setting.

CLEAR

If the information is incorrect, press CLEAR to cancel the setting.

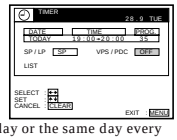
continued

Recording TV programmes using the VIDEO Plus+ system (continued)

4

If you want to change the date, tape speed, and the VPS / PDC function setting:

1 Press ← / → to highlight the item you want to change.
2 Press ↑ / ↓ to reset it.



- To record the same programme every day or the same day every week, see "Daily / weekly recording" below.
- To use the VPS / PDC function, set VPS / PDC to ON. For details of the VPS / PDC function, see "Timer recording with VPS / PDC signals" on page 45.

5

Press MENU to exit the menu.

6

Press **I** / ⏻ to turn off the VCR.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 4 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

TODAY → SUN-SAT (Sunday to Saturday) → MON-SAT (Monday to Saturday) → MON-FRI (Monday to Friday) → SAT (every Saturday) ..... → MON (every Monday) → SUN (every Sunday) → 1 month later → (dates count down) → TOMORROW → TODAY

Timer recording with VPS/PDC signals

Some broadcast systems transmit VPS (Video Programme System) or PDC (Programme Delivery Control) signals with their TV programmes. These signals ensure that your timer recordings are made regardless of broadcast delays, early starts, or broadcast interruptions (with the VPS or PDC indicator in the display window lit).

To use the VPS / PDC function, set VPS / PDC to ON in step 4 above. You can also use the VPS / PDC function for a source connected to the LINE-1 (TV) connector, the LINE-2 IN jacks, and the LINE-3 (Scart) connector.

To record satellite broadcasts

If you connect the satellite tuner and the VCR, you can record satellite programmes.

1 Turn on the satellite tuner.
2 On the satellite tuner, select the satellite programme for which you want to make a timer setting.
3 Keep the satellite tuner turned on until the VCR finishes recording the satellite programme for which you have made a timer setting.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press **I** / ⏻. The ⏲ indicator turns off and the VCR switches on. Remember to press **I** / ⏻ to reset the VCR after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV programme.

continued

Recording TV programmes using the VIDEO Plus+ system (continued)

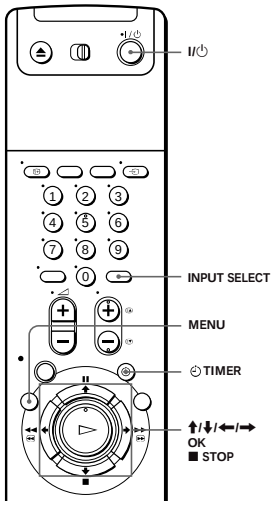
Tips

- To set the programme position with a two digit number, press –/–– (ten's digit) button followed by the programme number button.
- To set the programme position, you can also use the PROG + / – or programme number buttons.
- To set the tape speed, you can also use the SP / LP button.
- When you are recording a programme in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the LP mode. Note that some interference will appear on the picture at the point the tape speed is changed. If you want to keep the same tape speed, set AUTO LONG PLAY to OFF in the OPTIONS-1 menu (page 63).
- To check, change, or clear the programme setting, press ← / → to choose LIST, then press OK after step 4. For details, see step 3 in "Checking / changing / cancelling timer settings" (page 54).

Notes

- If the VPS / PDC signal is too weak or the broadcasting station failed to transmit VPS / PDC signals, the VCR will start recording at the set time without using the VPS / PDC function.
- The ⏲ indicator flashes in the display window when you press **I** / ⏻ with no tape inserted.
- When you set TIMER OPTIONS to STANDARD in the OPTIONS-2 menu, the VIDEO PLUS+ menu does not appear on the TV screen. Select VIDEO PLUS+ or VARIABLE.

Setting the timer manually



If the VIDEO Plus+ system is not available in your area, follow the instructions below to set the timer to record programmes.

Before you start...

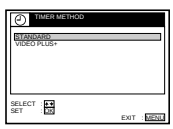
- Check that the VCR clock is set to the correct time and date.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.
- Set TIMER OPTIONS to STANDARD or VARIABLE in the OPTIONS-2 menu (see page 63).

1

Press ⏲ TIMER.

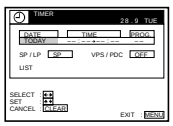
- When you set TIMER OPTIONS to VARIABLE

  The TIMER METHOD menu appears on the TV screen. Press ↑ / ↓ to select STANDARD, then press OK.



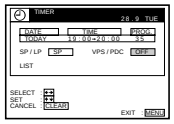
- When you set TIMER OPTIONS to STANDARD

  The TIMER menu appears on the TV screen.



continued

2 Set the date, start and stop times, programme position, tape speed, and VPS/PDC function:



1 Press → to highlight each item in turn.
2 Press ↑/↓ to set each item.
To correct a setting, press ← to return to that setting and reset.

- To record the same programme every day or the same day every week, see "Daily/weekly recording" on page 49.
- To use the VPS/PDC function, set VPS/PDC to ON. For details of the VPS/PDC function, see "Timer recording with VPS/PDC signals" on page 45.

INPUT SELECT

- To record from a source connected to the LINE-1 (TV) connector, the LINE-2 IN jacks, or the LINE-3 (Scart) connector, press INPUT SELECT to display "L1", "L2", or "L3" in the "PROG." position.

3 MENU — Press MENU to exit the menu.

4 ⏻ — Press I/⏻ to turn off the VCR.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To record from a source, leave the connected equipment switched on.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 2 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

TODAY → SUN-SAT (Sunday to Saturday) → MON-SAT (Monday to Saturday) → MON-FRI (Monday to Friday) → SAT (every Saturday) ..... → MON (every Monday) → SUN (every Sunday) → 1 month later → (dates count down) → TOMORROW → TODAY

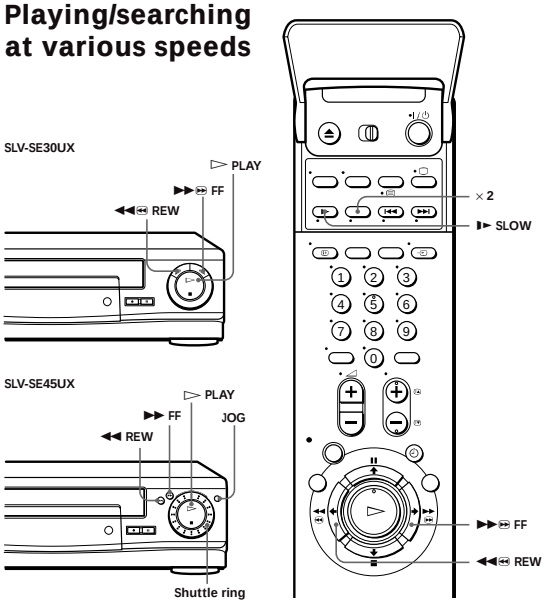
Tips

- To set the programme position, you can also use the PROG +/– or programme number buttons.
- To set the tape speed, you can also use the SP/LP button.
- When you are recording a programme in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the LP mode. Note that some interference will appear on the picture at the point the tape speed is changed. If you want to keep the same tape speed, set AUTO LONG PLAY to OFF in the OPTIONS-1 menu (page 63).
- Even if you set TIMER OPTIONS to VIDEO PLUS+ in the OPTIONS-2 menu, you can set the timer manually. Press MENU to select TIMER, then go to step 2.

Notes

- When setting the timer with VPS/PDC signals, enter the start and stop times exactly as indicated in the TV programme guide, otherwise the VPS/PDC function won't work.
- If the VPS/PDC signal is too weak or the broadcasting station failed to transmit VPS/PDC signals, the VCR will start recording at the set time without using the VPS/PDC function.
- The ⏲ indicator flashes in the display window when you press I/⏻ with no tape inserted.

Playing/searching at various speeds



Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold down ▶▶⏩ FF/▶▶ FF. During rewind, hold down ◀◀⏪ REW/◀◀ REW.
Play at high speed	• During playback, press ▶▶⏩ FF or ◀◀⏪ REW on the remote commander. • During playback, hold down ▶▶⏩ FF/▶▶ FF or ◀◀⏪ REW/◀◀ REW. When you release the button, normal playback resumes.
Play at twice the normal speed	During playback, press × 2.
Play in slow motion	During playback, press ▮► SLOW.

Playback options	Operation
Play frame by frame	During pause, press ▶▶⏩ FF or ◀◀⏪ REW on the remote commander. Hold down ▶▶⏩ FF or ◀◀⏪ REW to play one frame each second.
Rewind and start play	During stop, press ▷ PLAY on the VCR while holding down ◀◀⏪ REW/◀◀ REW on the VCR.

To resume normal playback

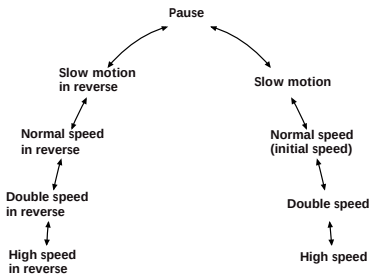
Press ▷ PLAY.

Using the shuttle ring (SLV-SE45UX only)

With the shuttle ring on the VCR, you can operate a variety of playback options. There are two ways for using the shuttle ring, normal mode and jog mode.

To use the shuttle ring in normal mode

During playback or pause, turn the shuttle ring clockwise or anticlockwise. Each change in the shuttle ring position changes the playback mode in the following way.



continued

To use the shuttle ring in jog mode

Use this mode for frame-by-frame playback.

Press JOG to enter the jog mode. The JOG button lights up. If you change to the jog mode during any playback mode, the playback pauses so you can see a still picture. Each change in the shuttle ring position shifts the picture one frame. To shift frames in reverse, turn the shuttle ring anticlockwise. The frame shift speed depends on the speed you turn the shuttle ring.

To resume normal mode, press JOG again. The JOG button goes off.

Tip

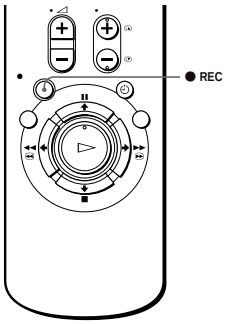
- Adjust the picture using the TRACKING +/– buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear at the top or bottom while pausing.
  - The picture shakes while pausing.

  To set tracking to the centre position, press both buttons (+/–) at the same time.

Notes

- The sound is muted during these operations.
- The picture may have snow when playing at high speed in reverse. (SLV-SE30UX only)
- In the LP mode, noise may appear or there may be no colour.

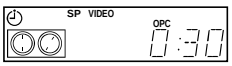
Setting the recording duration time



After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.

1 While recording, press ● REC.

The ⏲ indicator appears in the display window.



2 Press ● REC repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.

→ 0:30 → 1:00 - - - → 5:30 → 6:00 → Normal recording

The tape counter decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press ● REC repeatedly to set a new duration.

To cancel the duration

Press ● REC repeatedly until the ⏲ indicator disappears and the VCR returns to normal recording mode.

To stop recording

To stop the VCR while recording, press ■ STOP.

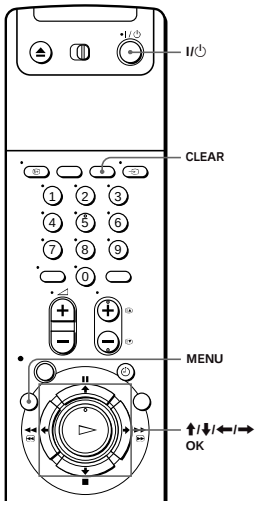
Note

- You cannot display the current tape time in the display window when setting the recording duration.

Checking/ changing/ cancelling timer settings

Before you start...

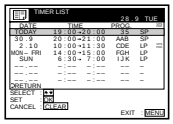
- Turn on your TV and set it to the video channel.



1 Press I/⏻ to turn on the VCR.

2 Press MENU, then press ↑/↓ to highlight LISTS and press OK.

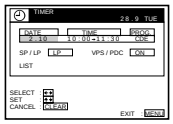
3 Press ↑/↓ to highlight TIMER LIST, then press OK:



- If you want to change or cancel a setting, go on to the next step.
- If you do not need to change or cancel the settings, press MENU, then turn off the VCR to return to recording standby.

4 Press ↑/↓ to select the setting you want to change or cancel, then press OK.

The selected setting appears in the TIMER menu.



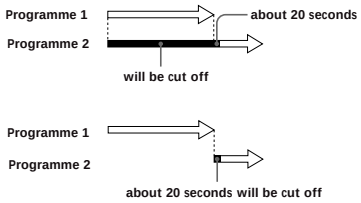
5
- To change the setting, press ←/→ to highlight the item you want to change, and press ↑/↓ to reset it.
- To cancel the setting, press CLEAR.

6 Press MENU.

If any settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The programme that starts first has priority and the second programme starts recording only after the first programme has finished. If the programmes start at the same time, the programme listed first in the menu has priority.



Searching using the Smart Search function

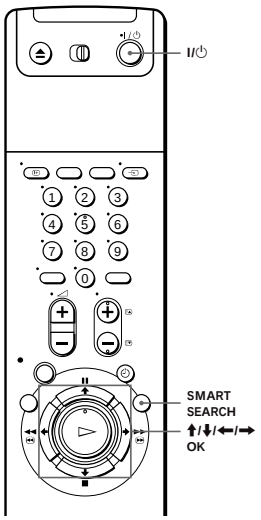
If you record multiple programmes on a tape, use the Smart Search function to see what has been recorded on your tape. You can see information such as date, time, and channel of programmes recorded on a tape. You can also start playback directly from the selected programme using the SMART SEARCH screen.

All programmes are listed on the screen, regardless of how the programme was recorded.

The data of the last tape inserted into the VCR is automatically stored in memory. If you want to recall the latest data screen, select LATEST DATA in the SMART SEARCH screen (see page 57).

Before you start…

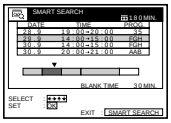
- Turn on your TV and set it to the video channel.



1 After recording, press I/⏻ to turn on the VCR.

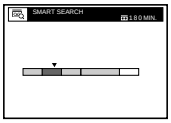
2 Press SMART SEARCH.

3 Press ↑/↓/←/→ to select the programme you want to start viewing.



4 Press OK.

The VCR starts searching, and playback starts automatically from the beginning of the selected programme.



To stop searching

Press ■ STOP.

To exit the SMART SEARCH screen

Press SMART SEARCH.

To record in a blank space

Blank space on the tape will appear as a blank row in the SMART SEARCH screen. Select the blank row in step 3, then press OK. The VCR rewinds/fast-forwards the tape to the beginning of the blank space, then stops. Start recording.

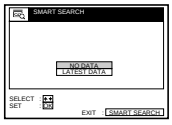
To recall the latest data screen after you remove the tape

You can display the data of the last tape used to record a programme, even after you have removed the tape.

If you reinsert the tape and record additional programmes, be sure to select LATEST DATA. Otherwise, all of the data for the tape is deleted.

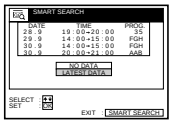
1 Reinsert the last tape that you used to record a programme.

2 Press SMART SEARCH.



3 Press ↑/↓ to highlight LATEST DATA.

If you want to reset the latest data screen, highlight NO DATA and press OK, then record a programme.



4 Press OK.

The latest data stored in the VCR's memory is displayed.

Tips

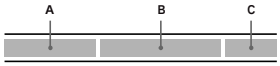
- You can store information for up to 24 programmes on a single list.
- While recording, you can display the SMART SEARCH screen using the SMART SEARCH button. If you decide to stop recording, press SMART SEARCH to make the SMART SEARCH screen disappear first. Then press ■ STOP.

continued

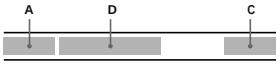
Notes

- If you begin recording a programme "D" from the middle of a previously recorded programme "A" and into another previously recorded programme "B," the Smart Search information for the second programme "B" which is recorded over is deleted.

Originally recorded programmes



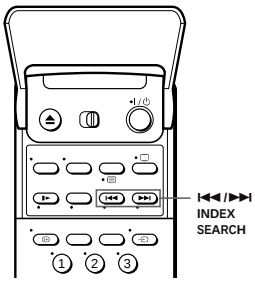
Recording the programme "D" over the programme "A" and "B"



- You cannot use this function unless the clock is set.
- Depending on the tape, the total or remaining time may not appear correctly.
- When recording a short programme (less than 10 minutes in SP mode, or 20 minutes in LP mode), the Smart Search function may not be available or the programme information may not appear. Also, if you record a long programme directly after a short programme, the Smart Search information for the short programme may be deleted.
- Blank space is measured from the end of the last recorded programme to the end of the tape. However, if you eject the tape then make a new recording on the same tape, the original recorded programme(s) is displayed as a blank space.
- If no information is stored in the VCR's memory, LATEST DATA does not appear in the SMART SEARCH screen.

Searching using the index function

The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording.



1 Insert an indexed tape into the VCR.

2 Press I◀◀ / ▶▶I INDEX SEARCH.

- To search ahead, press ▶▶I INDEX SEARCH.
- To search backwards, press I◀◀ INDEX SEARCH.

The VCR starts searching, and playback starts automatically from that point.

To stop searching

Press ■ STOP.

Note

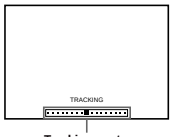
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the programme position during recording pause.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the ▨ indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

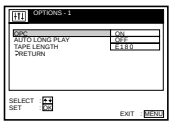
During playback, press TRACKING + / – to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ▨ indicator lights up). To resume automatic tracking adjustments, eject the tape and re-insert it.



Tracking meter

About the Optimum Picture Control (OPC) function

The Optimum Picture Control (OPC) function automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set OPC to ON in the OPTIONS-1 menu (with the OPC indicator in the display window lit). For details, see page 63.



OPC playback

The OPC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with OPC.

OPC recording

Whenever you insert a tape and start recording for the first time, the VCR adjusts to the tape using the OPC function (the OPC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the OPC function

Set OPC to OFF in the OPTIONS-1 menu. The OPC indicator in the display window goes off.

Tip

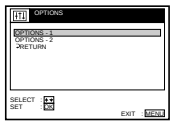
- To set tracking to the centre position, press the TRACKING + and – buttons at the same time.

Notes

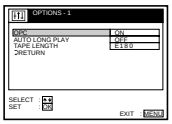
- You can adjust the tracking for the NTSC-recorded tape but the tracking meter won't be displayed.
- With the Auto Long Play function on, the OPC function will work only in SP mode. If the tape speed automatically switches from SP to LP, the OPC function turns off. If, however, the entire programme is recorded in LP mode, the OPC function will work.
- There is a delay of about ten seconds before the VCR actually starts recording while the VCR analyses the tape. To avoid the delay, first set the VCR to recording pause (the OPC indicator flashes slowly) and press ● REC to have the VCR analyse the tape (the OPC indicator flashes rapidly). After the OPC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you want to start recording quickly without using the OPC function, first set the VCR to recording pause (the OPC indicator flashes slowly) and press ❚❚ PAUSE to start recording.

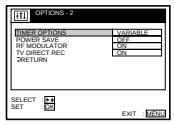
Changing menu options

1 Press MENU, then select OPTIONS and press OK.



2 Press ↑/↓ to highlight OPTIONS-1 or OPTIONS-2, then press OK.





3 Press ↑/↓ to select the option, then press OK.
4 Press ↑/↓ to change the setting, then press OK.
5 Press MENU to return to the original screen.

Menu choices

Initial settings are indicated in bold print.

OPTIONS-1

Menu option	Set this option to
OPC	• **ON** to switch on the OPC (Optimum Picture Control) function and improve picture quality. • OFF to switch off OPC.
AUTO LONG PLAY	• ON to change the timer recording tape speed automatically to the LP mode when the remaining tape becomes shorter than the recording time. • **OFF** to keep the set tape speed.
TAPE LENGTH	• **E180** to use an E-180 or shorter type tape. • E195 to use an E-195 type tape. • E240 to use an E-240 type tape. • E300 to use an E-300 type tape.

OPTIONS-2

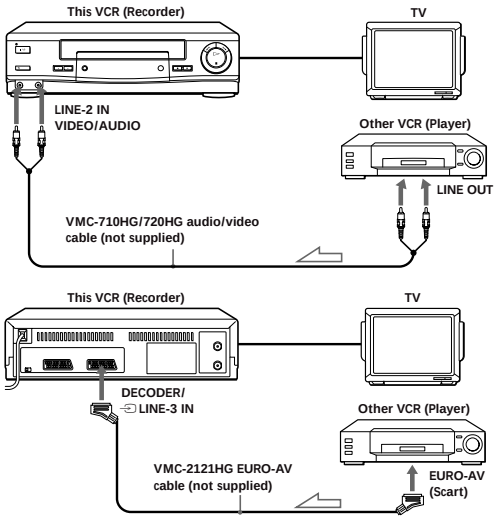
Menu option	Set this option to
TIMER OPTIONS	• **VARIABLE** to display the TIMER METHOD menu for selecting STANDARD or VIDEO PLUS+ when pressing ◴ TIMER button. • STANDARD to display the TIMER menu when pressing the ◴ TIMER button. • VIDEO PLUS+ to display the VIDEO PLUS+ menu when pressing the ◴ TIMER button. For details, see pages 42 and 47.
POWER SAVE	• ON to turn off the indicators in the display window to conserve the VCR power. • **OFF** to turn on the indicators in the display window while the VCR is standing by.
RF MODULATOR	• **ON** if you connect the VCR to your TV using only the aerial cable. • OFF if you connect the VCR to your TV using the EURO-AV cable.
TV DIRECT REC	• **ON** to activate the TV Direct Rec function. • OFF to deactivate it.

Note

- When you set a timer recording, the indicators in the display window remain on, even though POWER SAVE is set to ON.

Editing with another VCR

How to connect to record on this VCR



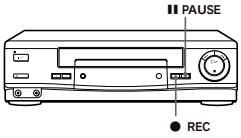
Tip

- You can also use the LINE-1 (TV) connector instead.

Notes

- Make sure you connect the plugs to jacks of the same colour.
- If you connect this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.
- If the other VCR doesn't have a EURO-AV (Scart) connector, use the VMC-2106HG cable instead and connect the cable to the line out jacks of the other VCR.

Operation (when recording on this VCR)



Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT to display "L2" ("L1" or "L3") in the display window.
- Press SP/LP to select the tape speed, SP or LP.

1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press II PAUSE.

3 Press ● REC on this VCR to set it to recording pause.

4 To start editing, press the II PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tip

- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording.

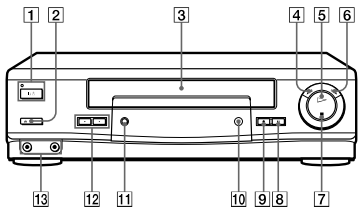
Note

- If you start editing following the procedure above, the VCR won't start recording with the OPC function. To record a tape with the OPC function, press ● REC again during recording pause in step 3 so the VCR analyses the tape. Then, when you start editing in step 4, press II PAUSE after the OPC indicator stops flashing. If you press II PAUSE before the OPC indicator stops flashing, the OPC function is cancelled.

Index to parts and controls

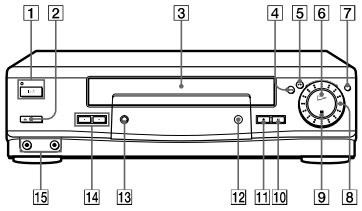
Refer to the pages indicated in parentheses ( ) for details.

Front panel (SLV-SE30UX)



1 I/⏻ ON/STANDBY switch/indicator (32)
2 ⏏ EJECT button (35, 55)
3 Tape compartment
4 ◀◀ REW (rewind) button (35, 50)
5 ▷ PLAY button (35, 51)
6 ▶▶ FF (fast-forward) button (35, 50)
7 ■ STOP button (35, 65)
8 II PAUSE button (32, 35, 65)
9 ● REC (record) button (38, 53, 65)
10 Remote sensor (5)
11 AUTO SET UP/RF (Radio Frequency) CHANNEL button (13, 14)
12 PROGRAM/TRACKING +/– buttons (52, 60)
13 LINE-2 IN VIDEO/AUDIO jacks (64)

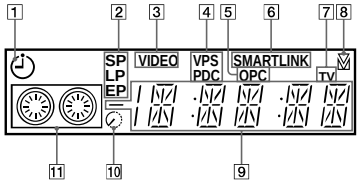
Front panel (SLV-SE45UX)



1 I/⏻ ON/STANDBY switch/indicator (32)
2 ⏏ EJECT button (35, 55)
3 Tape compartment
4 ◀◀ REW (rewind) button (35, 50)
5 ▶▶ FF (fast-forward) button (35, 50)
6 ▷ PLAY button (35, 51)
7 JOG button (52)
8 Shuttle ring (51)
9 ■ STOP button (35, 65)
10 II PAUSE button (32, 35, 65)
11 ● REC (record) button (38, 53, 65)
12 Remote sensor (5)
13 AUTO SET UP/RF (Radio Frequency) CHANNEL button (13, 14)
14 PROGRAM/TRACKING +/– buttons (52, 60)
15 LINE-2 IN VIDEO/AUDIO jacks (64)

continued

Display window



1 Timer indicator (44, 48)

2 Tape speed indicators (38)

3 VIDEO indicator (11, 39)

4 VPS (Video Programme System) / PDC (Programme Deliver y Control) indicator (45)

5 OPC (Optimum Picture Contr ol) indicator (60)

6 SMARTLINK indicator (11)

7 TV indicator (41)

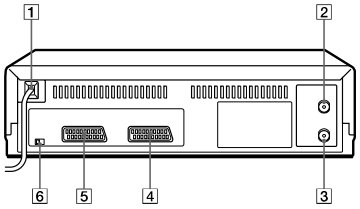
8 Tracking indicator (60)

9 Time counter / clock / line / programme position indicator (35, 38, 65)

10 Remaining time indicator (39)

11 Tape / recor ding indicator (38)

Rear panel



1 Mains lead (9, 10)

2 AERIAL IN
ANTENNE ENTREE connector (9, 10)

3 AERIAL OUT
ANTENNE SORTIE connector (9, 10)

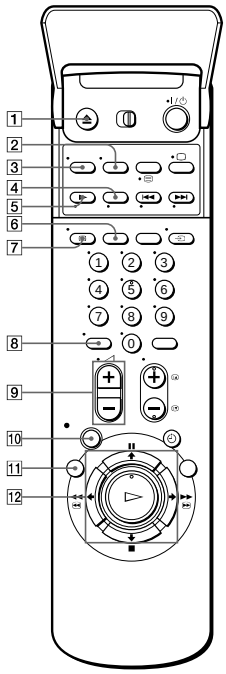
4 LINE-3 IN
ENTREE LIGNE-3 connector (64)

5 LINE-1 (TV)
LIGNE-1 (TV) connector (10)

6 NTSC PB (Play Back) switch (35)

continued

Remote commander



1 ⏏ EJECT button (35)

2 WIDE button (*for TV*) (7)

3 AUDIO MONITOR button (*for TV*) (7)

4 ×2 button* (50)

5 ▮► SLOW button* (50)

6 SP (Standar d Play) / LP (Long Play) button (38)

7 DISPLAY button (39)

8 –/– – (ten's digit) button (6, 40)

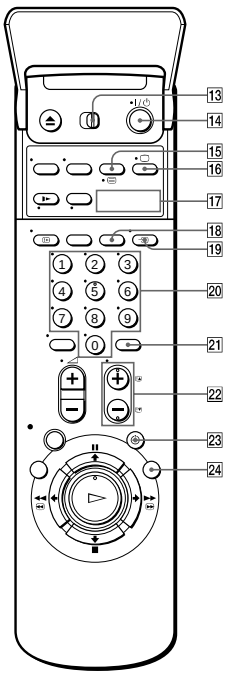
9 (volume) + / – buttons *(for TV)* (6)

10 ● REC (recor d) button (38, 53)

11 MENU button (16, 54, 62)

12 ▮▮ PAUSE / ↑ button (16, 35)
■ STOP / ↓ button (16, 35)
◀◀ REW (rewind) / ← button (35, 50)
▶▶ FF (fast-for war d) / → button (35, 50)
PLAY / OK button (16, 35)

* FASTEXT buttons (*for TV*)



13 TV / VIDEO remote control switch (5)

14 I/⏻ (on / standby) switch (6, 44)

15 COUNTER / REMAIN button (39)

16 (Teletext) button *(for TV)* (7)

17 TV power on / TV mode select button *(for TV)* (7)

18 ⏮ / ⏭ INDEX SEARCH buttons* (59)

19 CLEAR button (35, 43, 55)

20 TV / VIDEO button (6, 11, 39)

21 Programme number buttons (6, 40)

22 INPUT SELECT button (38, 48, 65)

23 PROG (programme) + / – buttons (6, 18, 38)

24 / Teletext page access buttons *(for TV)* (7)

TIMER button (42, 47)

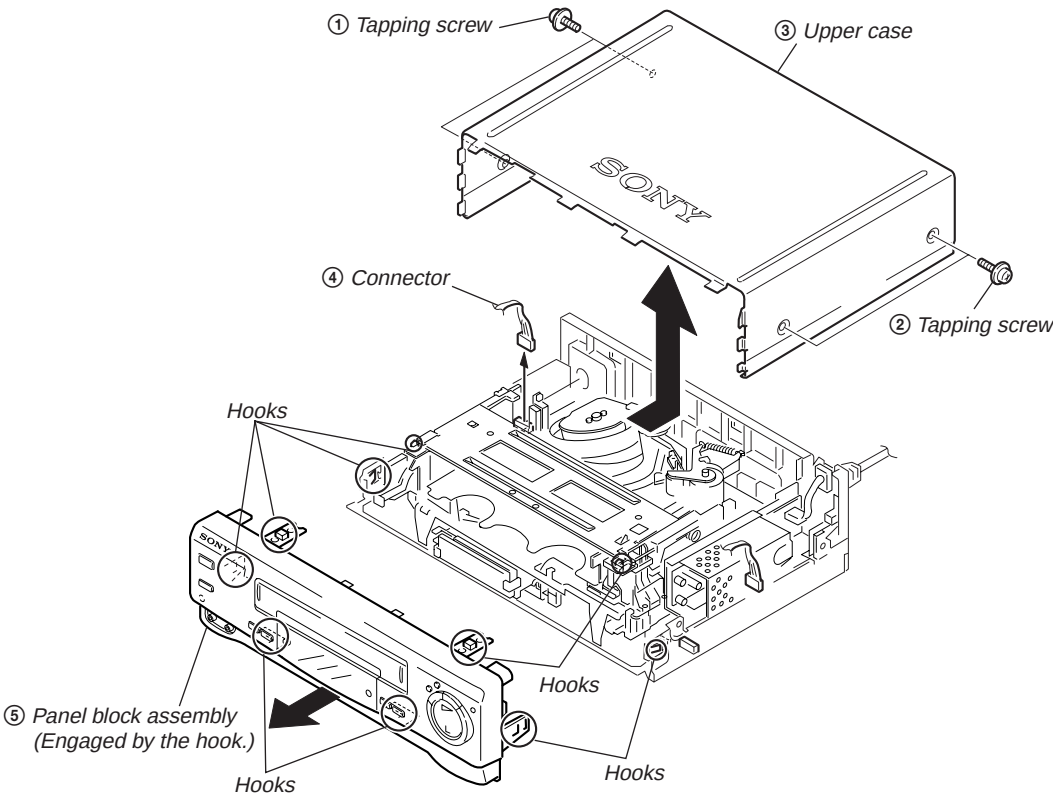
SMART SEARCH button (56)

* FASTEXT buttons (*for TV*)

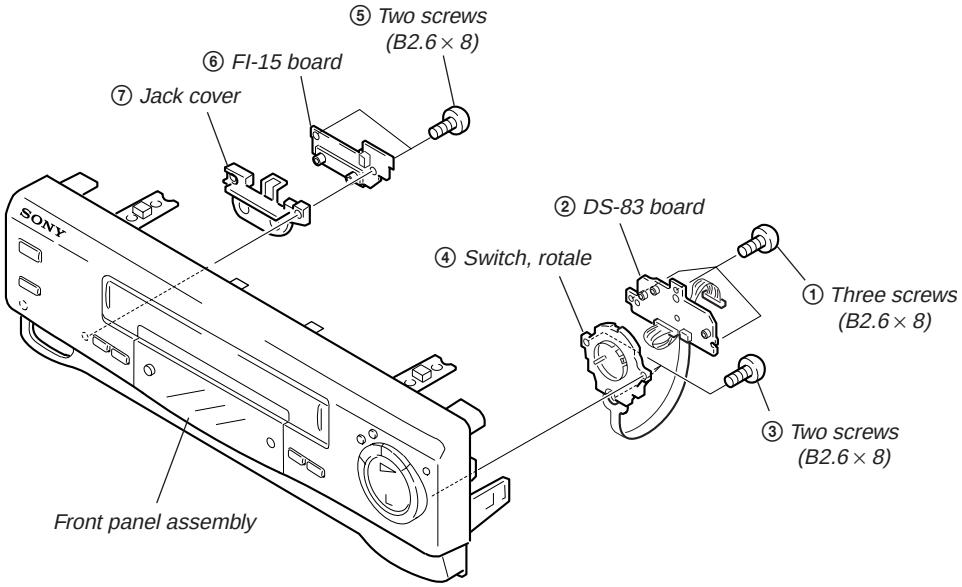
SECTION 2
DISASSEMBLY

NOTE: Follow the disassembly procedure in the numerical order given.

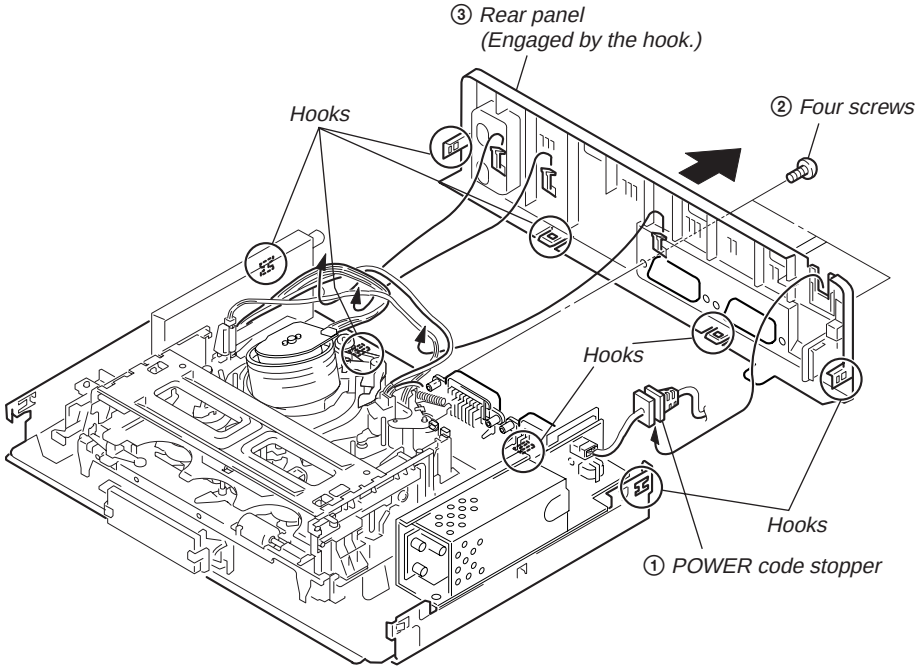
2-1. CASE, FRONT PANEL BLOCK ASSEMBLY



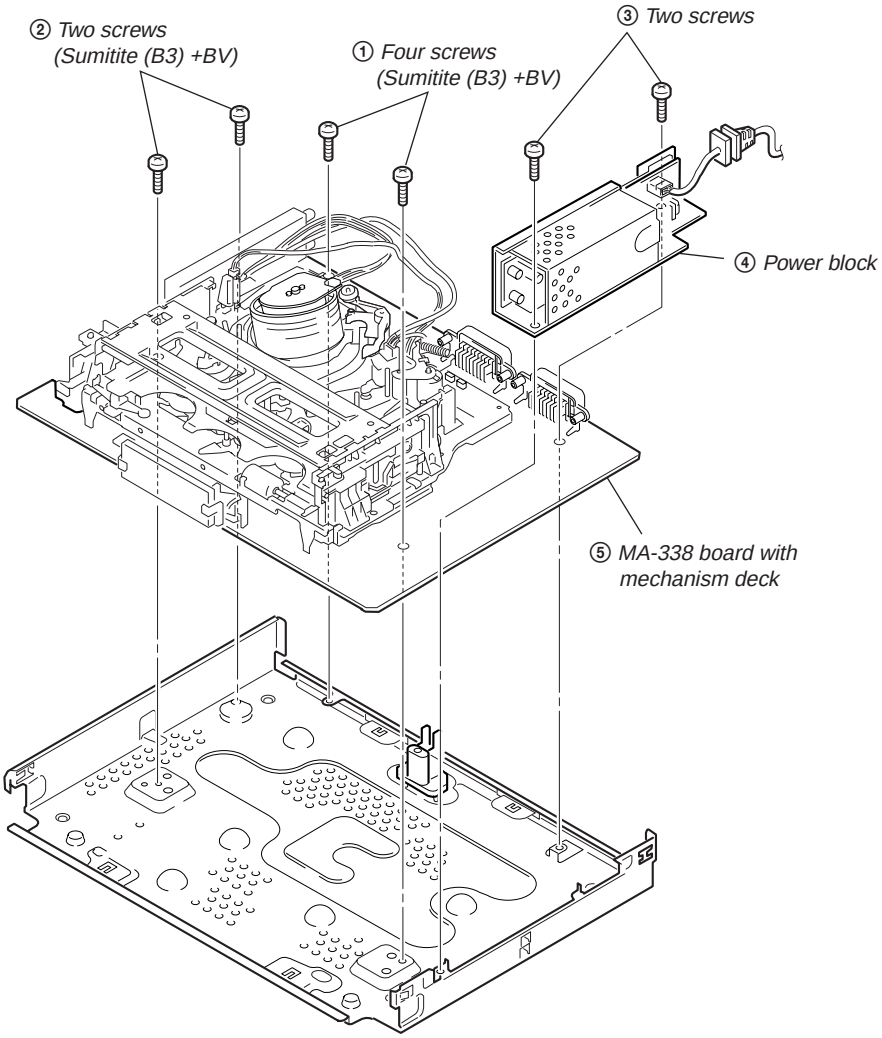
2-2. FI-15 BOARD, DS-83 BOARD



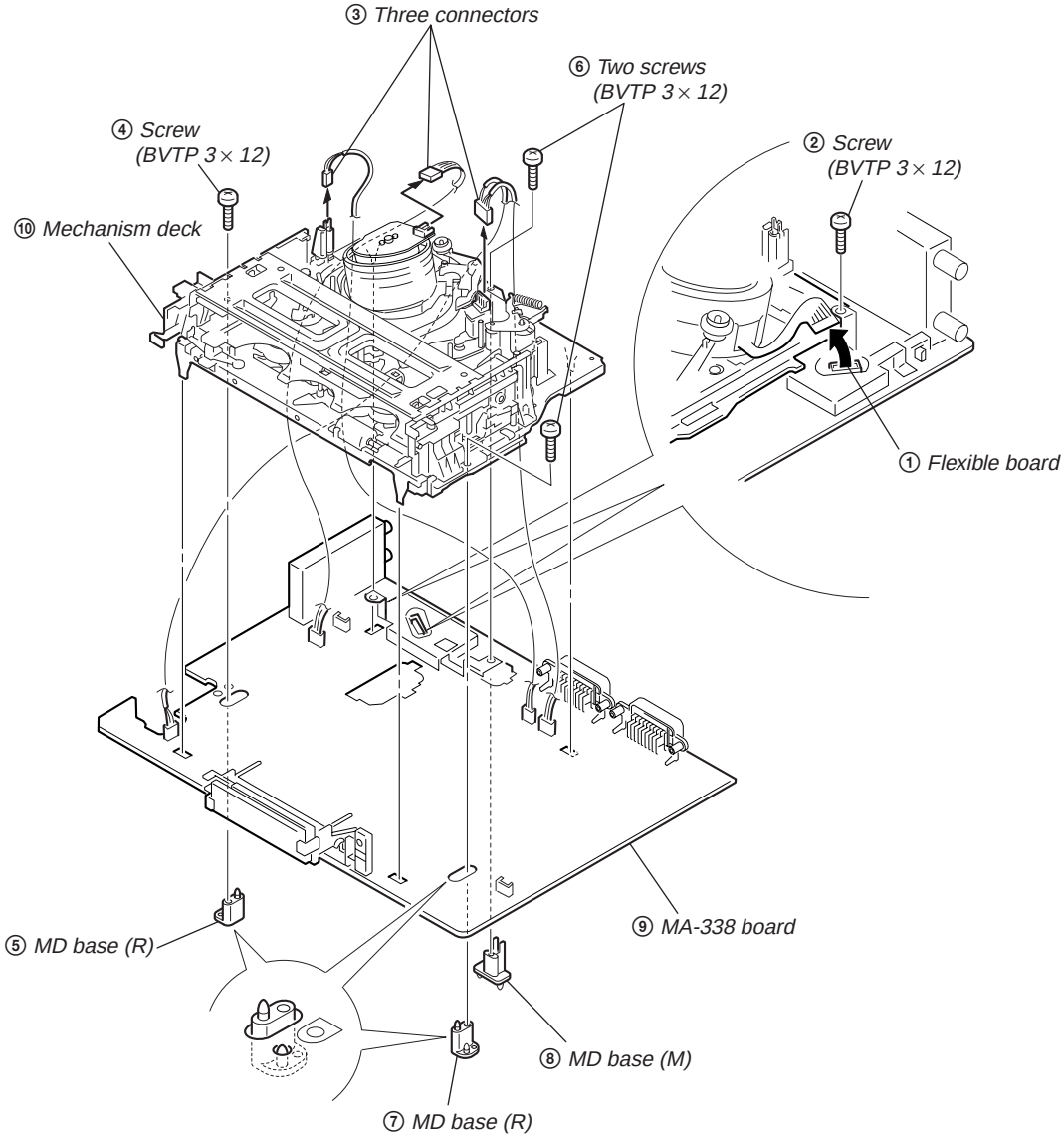
2-3. REAR PANEL



2-4. POWER BLOCK, MA-338 BOARD (WITH S MECHANISM DECK)

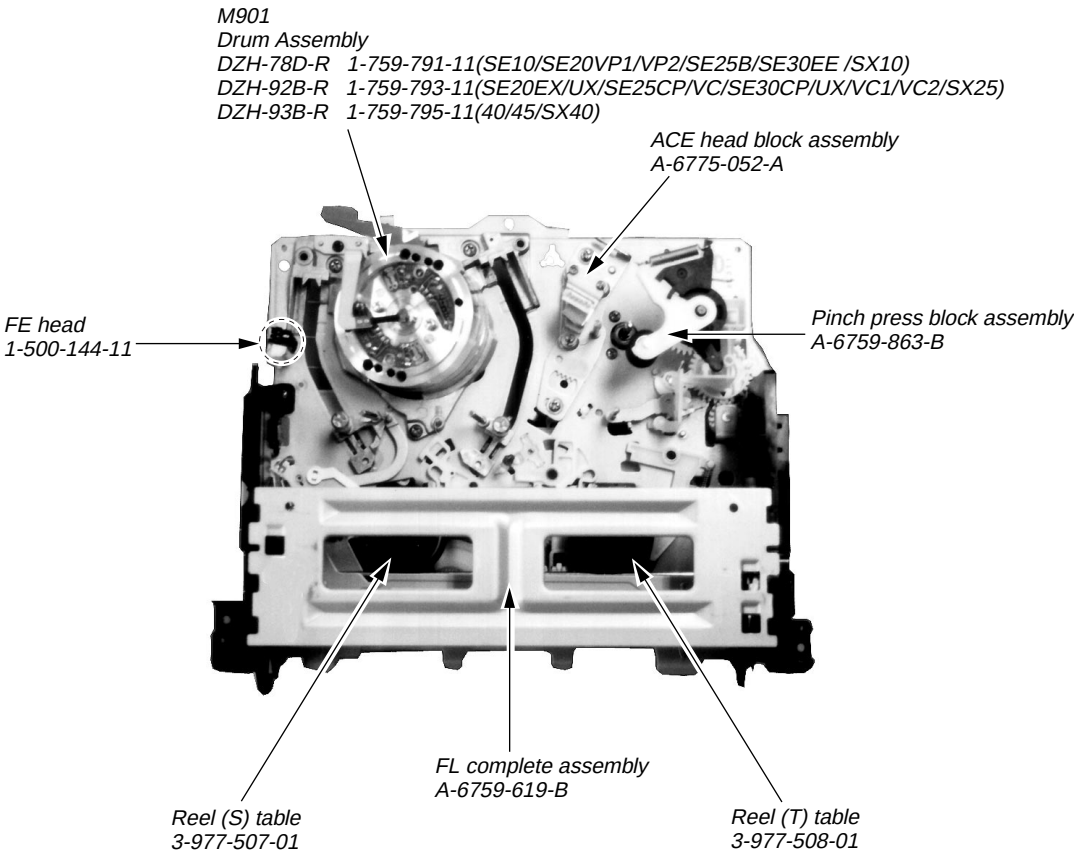


2-5. S MECHANISM DECK

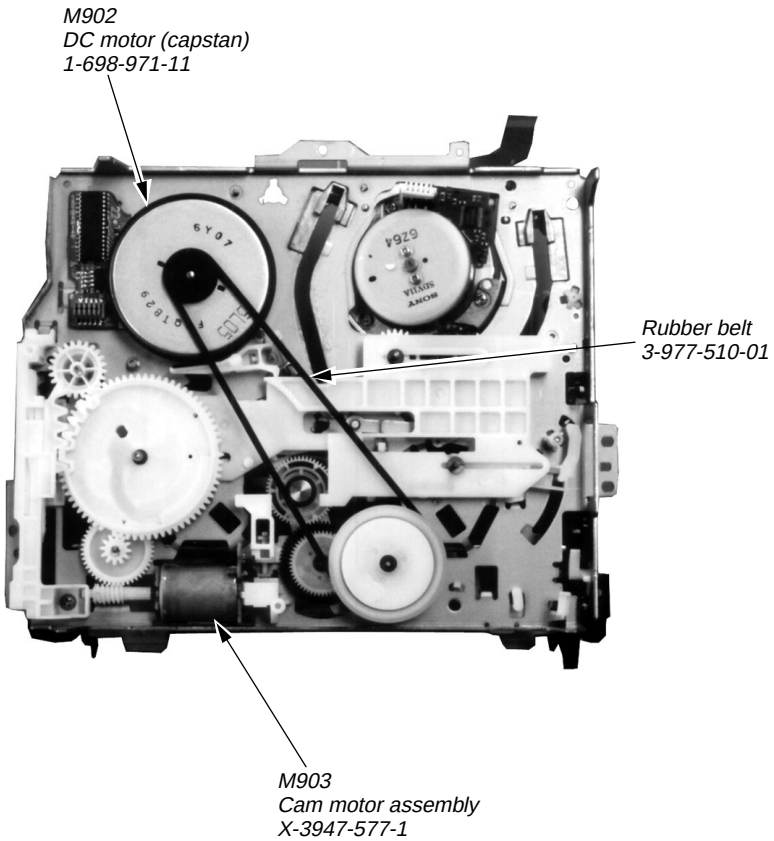


2-6. INTERNAL VIEWS

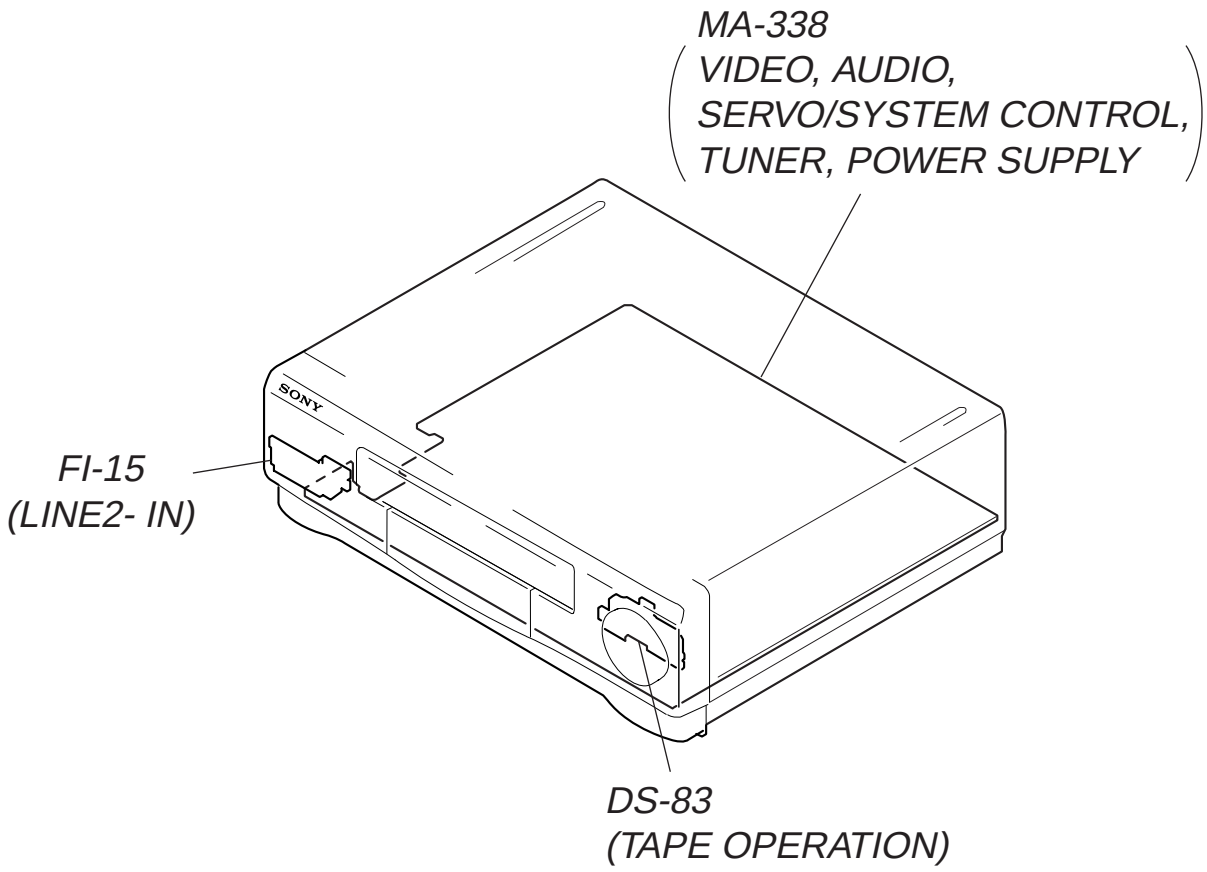
— Top View —



— Bottom View —

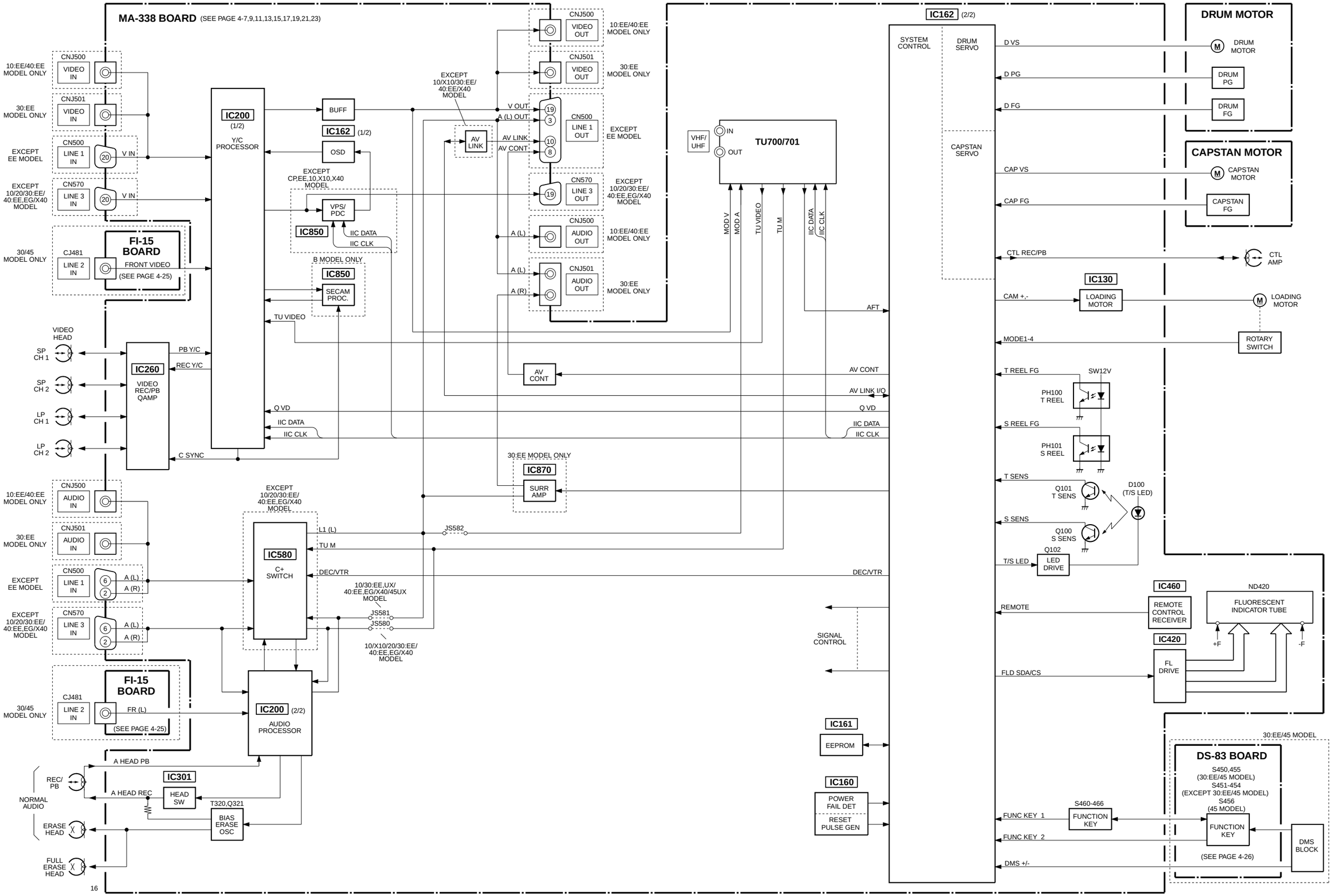


2-7. CIRCUIT BOARDS LOCATION

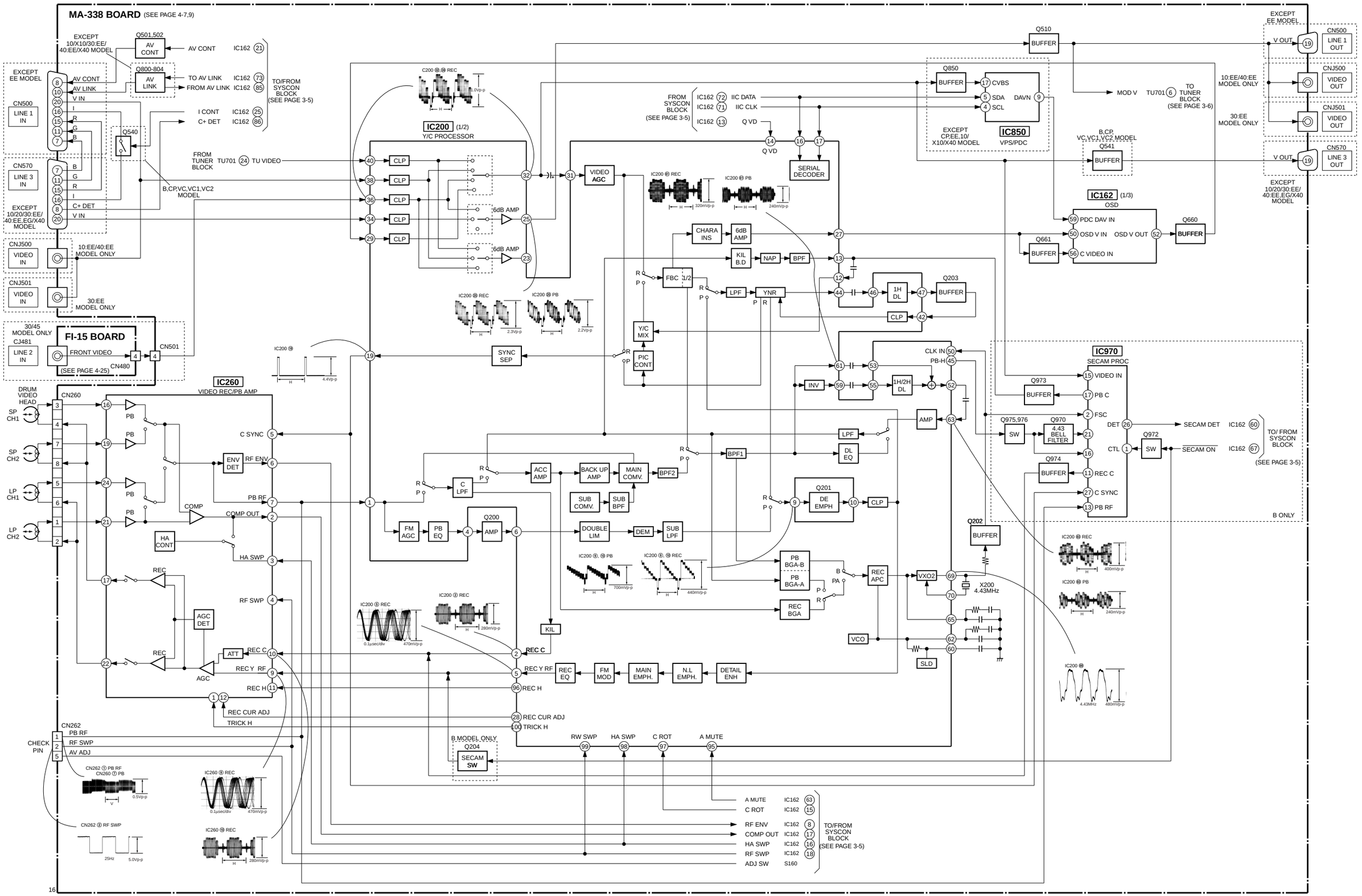


SECTION 3
BLOCK DIAGRAMS

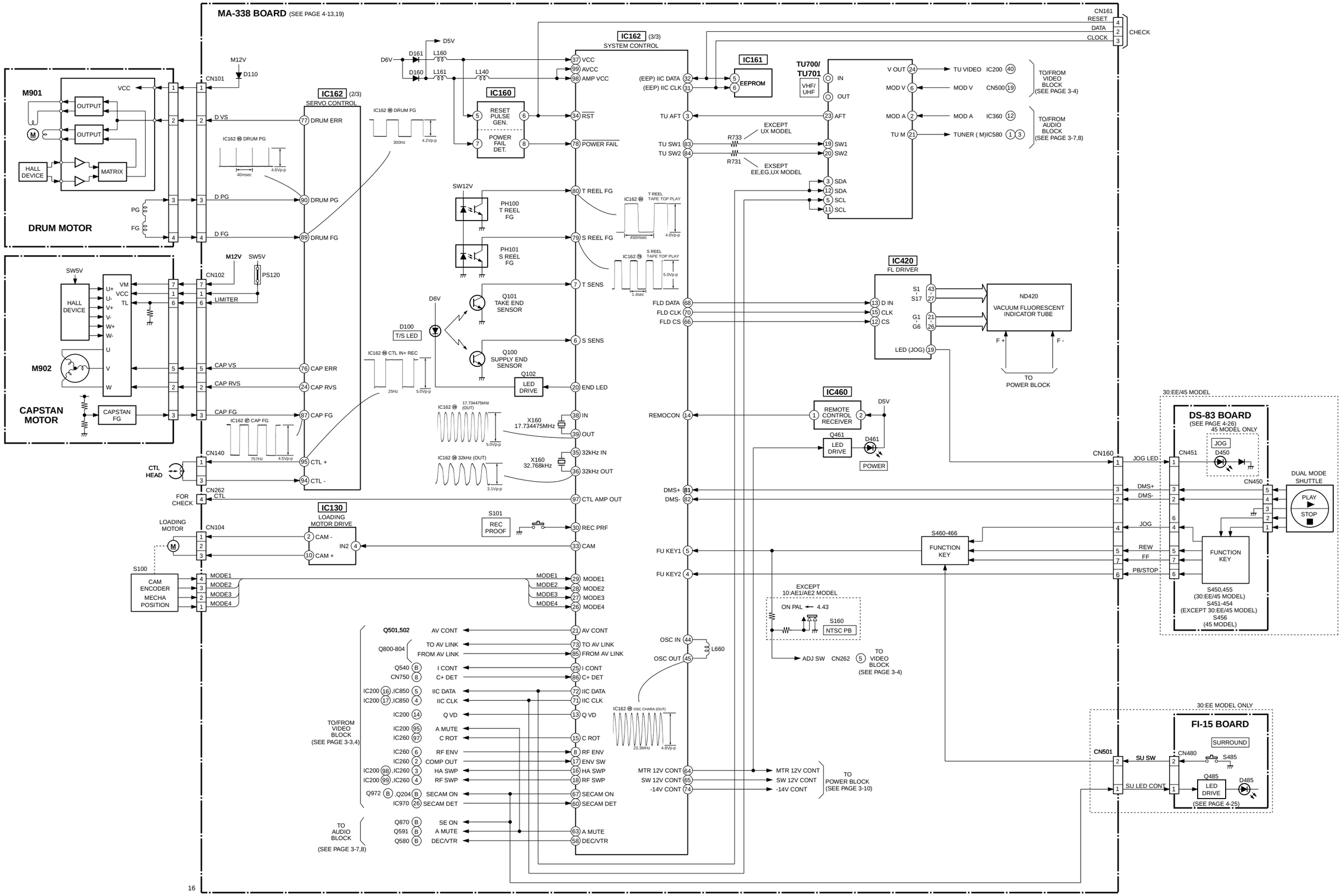
3-1. OVERALL BLOCK DIAGRAMS



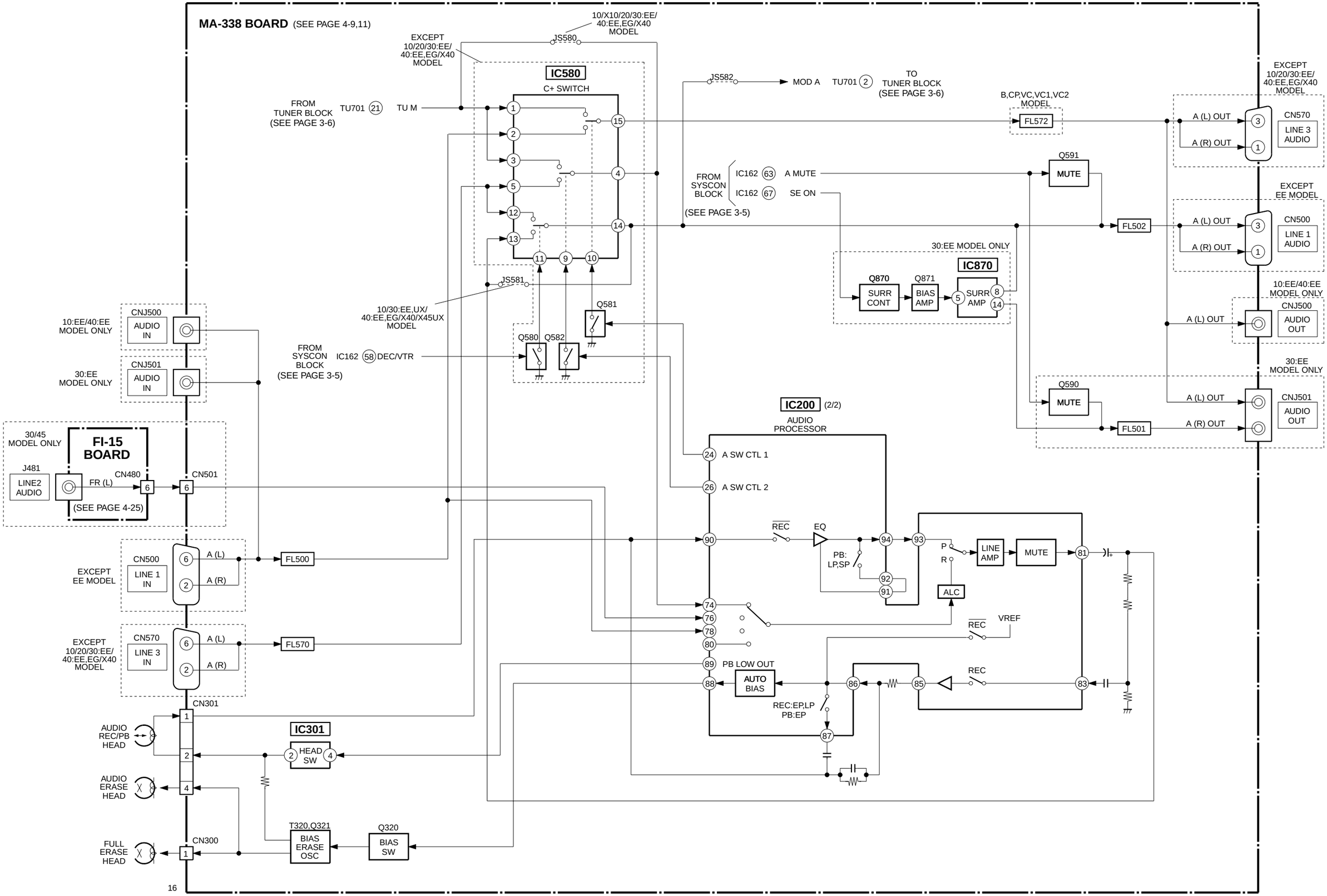
3-2. VIDEO BLOCK DIAGRAM



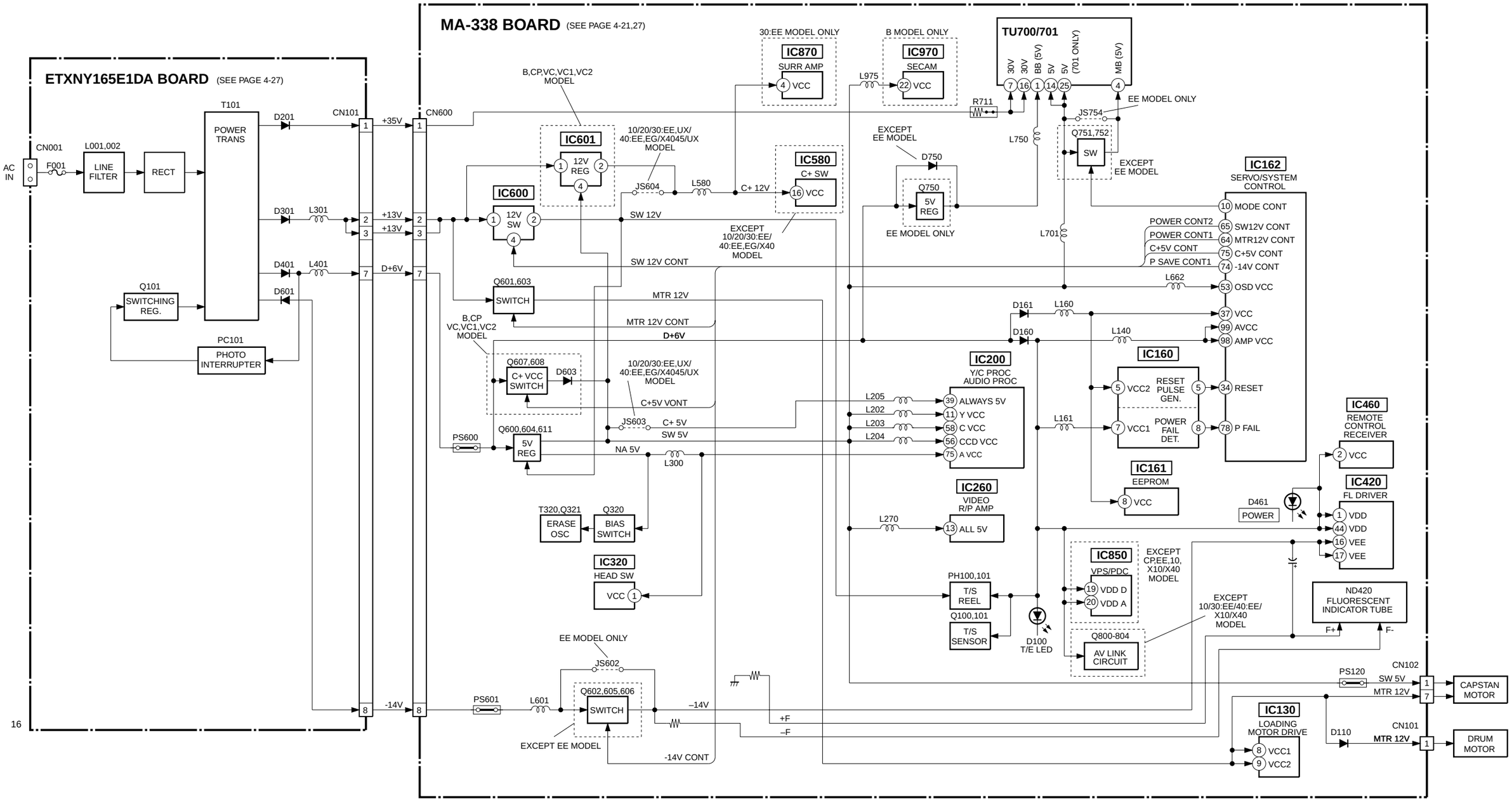
3-3. SERVO/SYSTEM CONTROL/TUNER BLOCK DIAGRAM



3-4. AUDIO BLOCK DIAGRAM



3-5. POWER BLOCK DIAGRAM

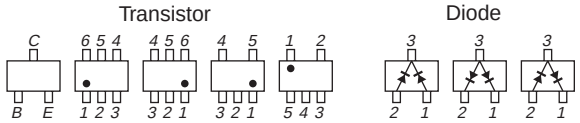


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

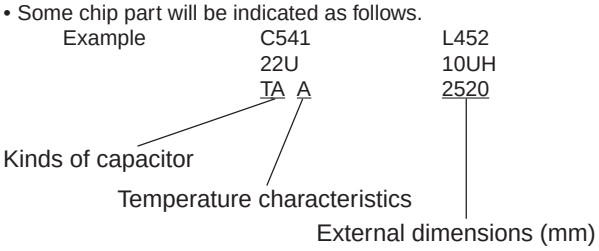
(For printed wiring boards)

- ▒▒▒▒: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
  kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- △ : internal component.
- **B +** : B+ Line.
- **B −** : B– Line.
- Circled numbers refer to waveforms.
- Readings are taken with a color-bar signal input.
- Voltage are dc between ground and measurement points.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- : adjustment for repair.
- Circled numbers refer to waveforms.

When indicating parts by reference number, please include the board name.

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

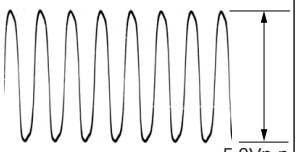
- Abbreviation
  X10 : SX10
  X25 : SX25
  X40 : SX40

MA-338 BOARD

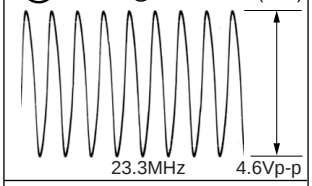
(SERVO/SYSTEM CONTROL BLOCK)

① IC162 ㊱ 32kHz (OUT)

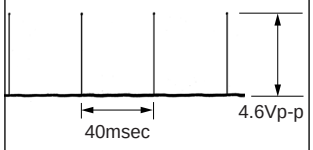
② IC162 ㊴ 17.734475kHz (OUT)



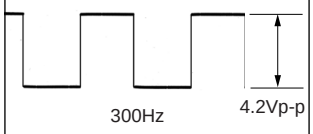
③ IC162 ㊺ OSC CHARA (OUT)



④ IC162 ㊿ DRUM PG

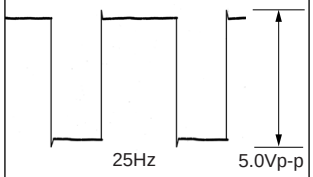


⑤ IC162 ㊽ DRUM FG

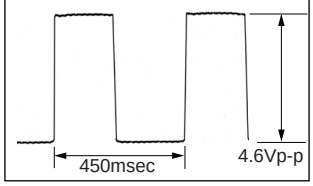


⑥ IC162 ㊼ CAP FG

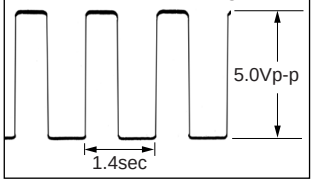
⑦ IC162 ㊺ CTL IN+ REC



⑧ IC162 ㊵ T REEL TAPE TOP PLAY

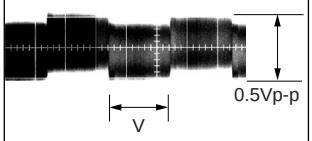


⑨ IC162 ㊾ S REEL TAPE TOP PLAY

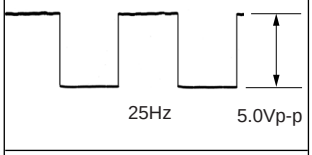


(REC/PB BLOCK)

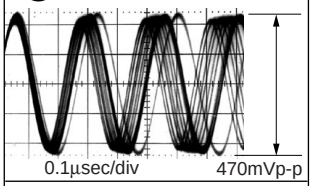
⑩ CN262 ① PB RF
CN260 ⑦ PB



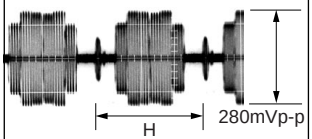
⑪ CN262 ② RF SWP



⑫ IC260 ⑨ REC

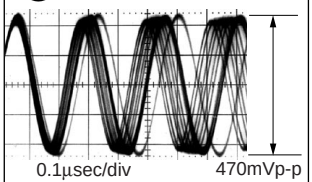


⑬ IC260 ⑩ REC

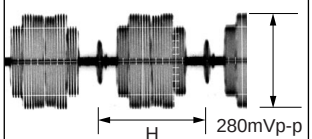


(VIDEO BLOCK)

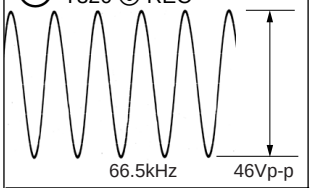
⑭ IC200 ⑤ REC



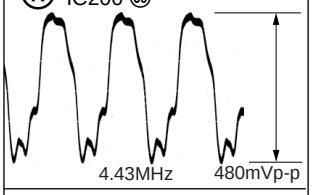
⑮ IC200 ② REC



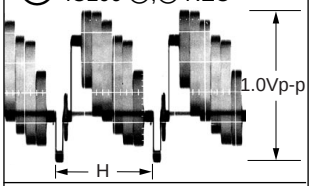
⑯ T320 ⑥ REC



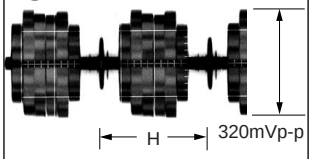
⑰ IC200 ㊾



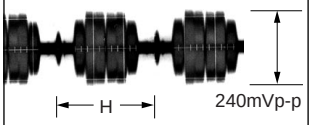
⑱ IC200 ㉜,㊱ REC



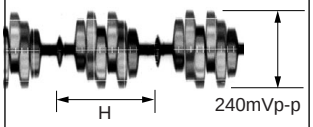
⑲ IC200 ㊶ REC



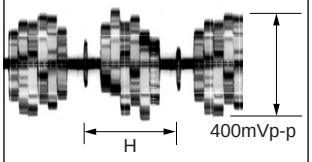
⑲ IC200 ㊶ PB



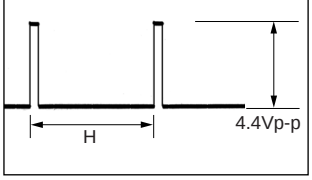
⑳ IC200 ㊸ PB



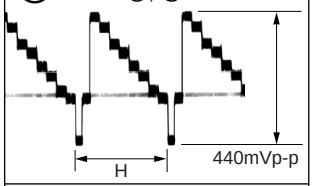
⑳ IC200 ㊸ REC



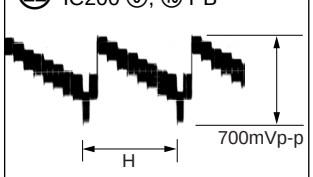
㉑ IC200 ⑲



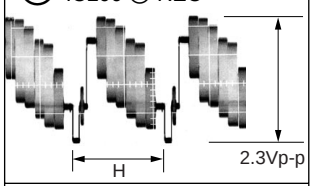
㉒ IC200 ⑨, ⑩ REC



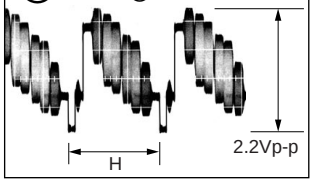
㉒ IC200 ⑨, ⑩ PB



㉓ IC200 ㉕ REC



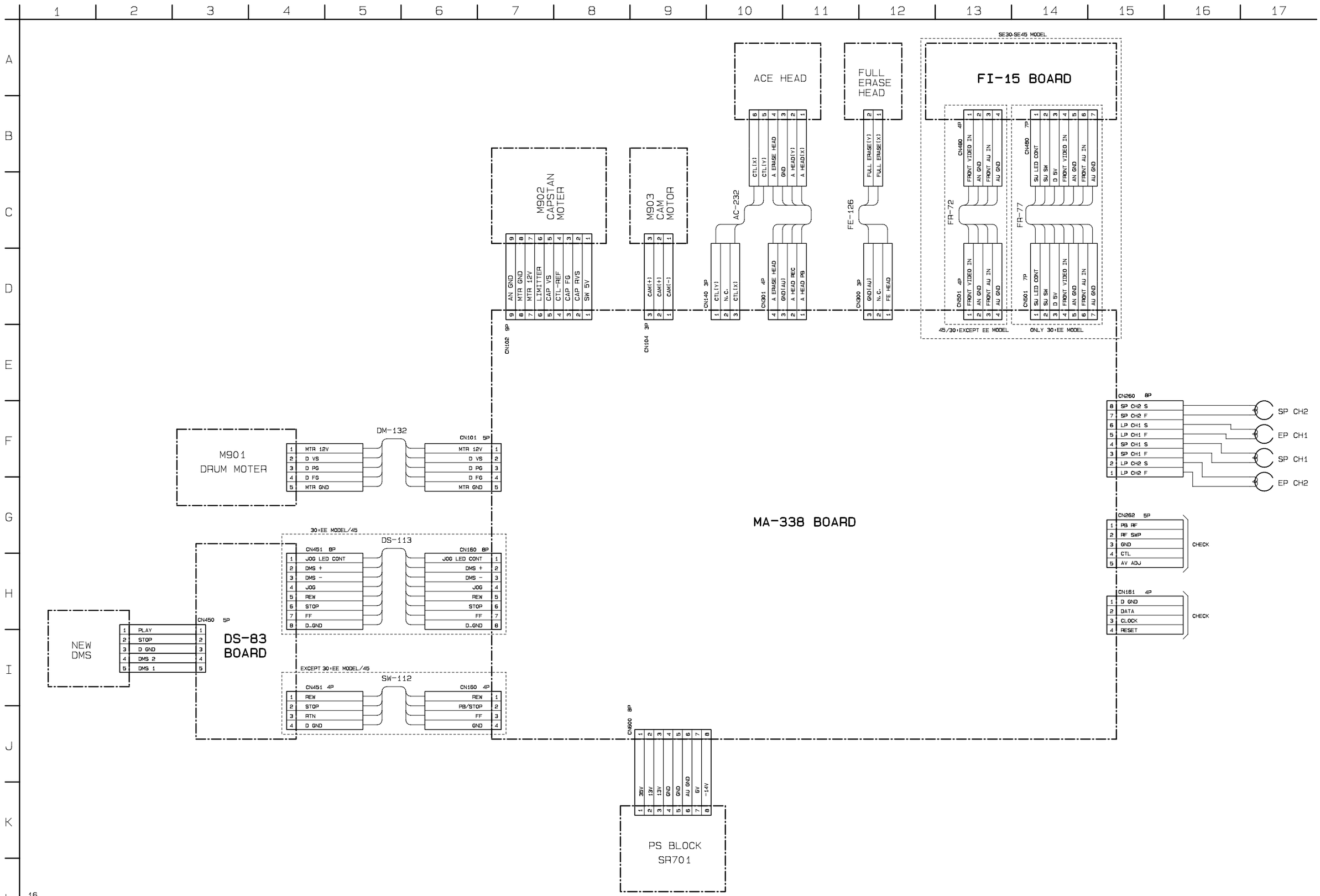
㉓ IC200 ㉕ PB



(DISPLAY BLOCK)

㉔ IC420 ② X OUT

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

MA-338 (VIDEO, AUDIO, SERVO/SYSTEM CONTROL,TUNER) PRINTED WIRING BOARD

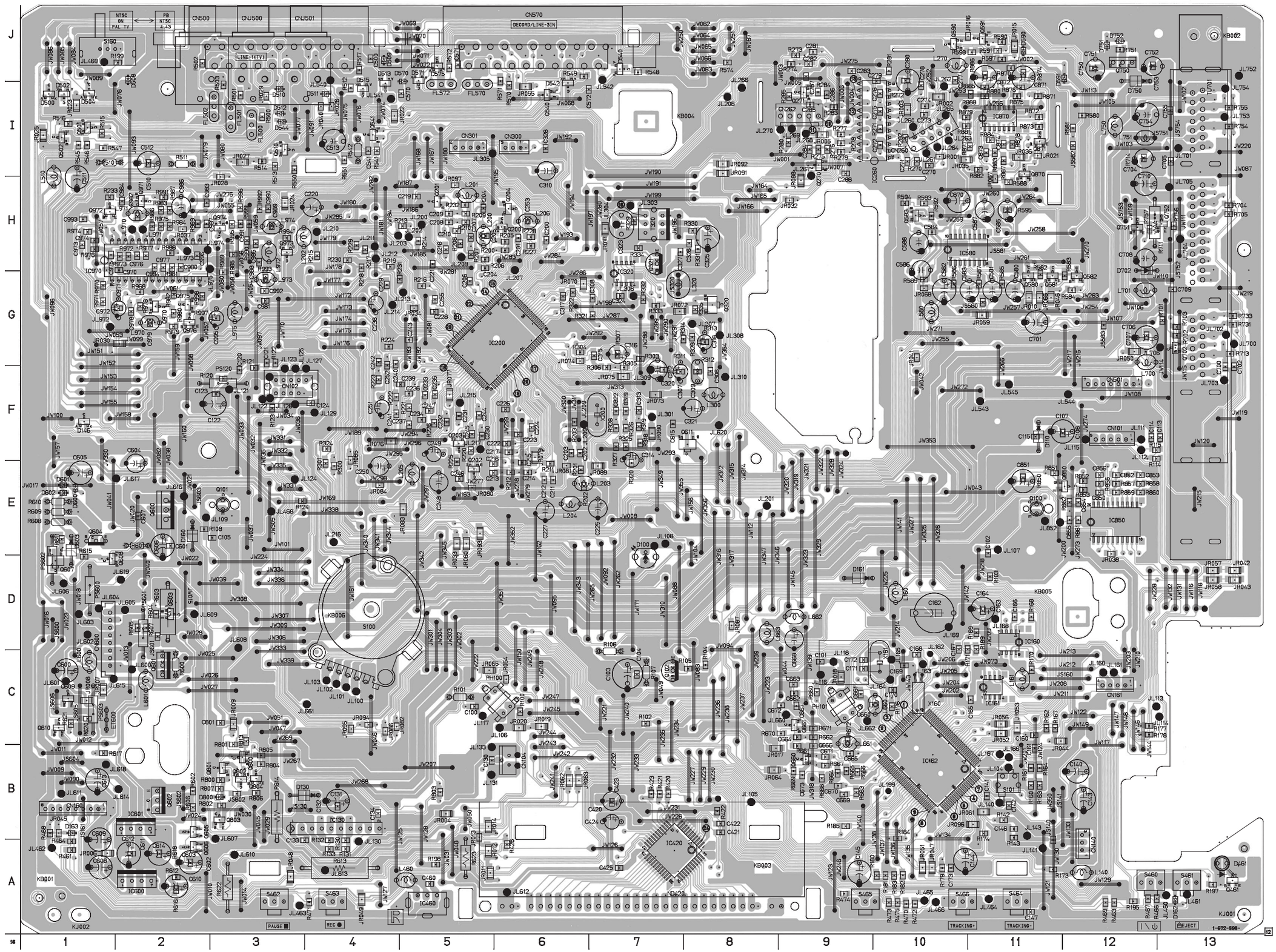
— Ref. No. MA-338 Board:1,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

MA-338 BOARD

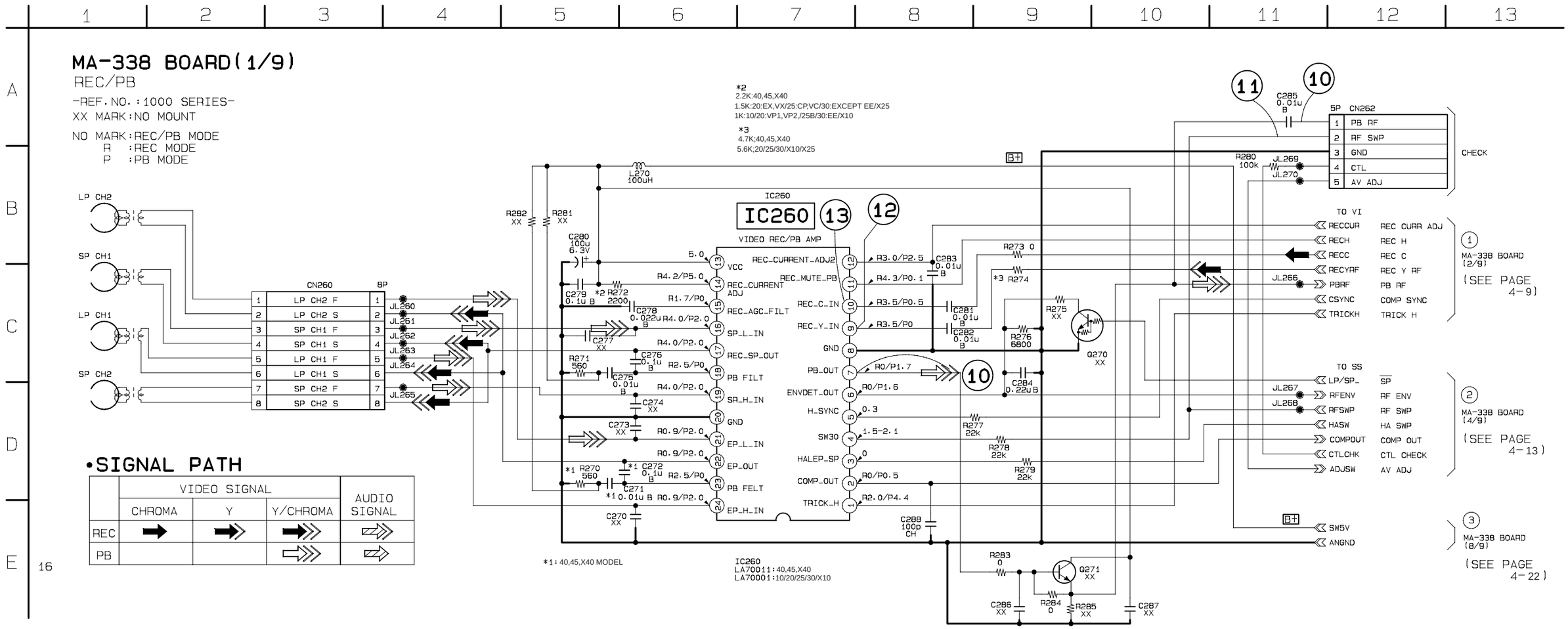
CN101	F-12	IC162	B-10
CN102	F-3	IC200	G-5
CN104	B-6	IC260	I-9
CN140	A-12	IC320	G-7
CN160	B-1	IC420	A-7
CN161	C-12	IC460	A-5
CN260	I-10		
CN262	I-9	IC580	H-10
CN300	I-6	IC600	A-2
CN301	I-5	IC850	E-12
CN500	J-2		
CN501	F-12	Q101	E-3
CN570	J-6	Q102	C-7
CN600	D-1	Q200	H-6
		Q201	H-5
D100	D-7	Q202	E-5
D110	F-11	Q203	F-5
D146	F-1	Q320	G-8
D160	E-2	Q321	G-7
D161	D-9	Q461	A-13
D162	A-13	Q501	I-1
D163	B-1	Q502	I-1
D461	A-13	Q510	I-3
D500	I-1	Q580	G-11
D504	I-1	Q581	G-11
D508	I-2	Q582	G-12
D510	I-3	Q583	H-10
D511	I-5	Q591	J-11
D512	I-3	Q600	E-2
D513	I-4	Q601	C-2
D515	I-4	Q602	B-2
D540	J-7	Q603	D-2
D544	I-3	Q604	E-1
D570	I-5	Q605	B-2
D571	J-5	Q606	A-2
D590	J-11	Q611	F-7
D591	I-11	Q660	B-9
D600	E-1	Q661	C-9
D601	E-1	Q751	H-12
D602	E-1	Q752	H-12
D702	G-12	Q800	B-3
D750	I-12	Q801	B-3
D800	B-3	Q802	B-3
		Q803	B-3
IC130	B-4	Q804	B-3
IC160	C-11	Q850	E-11
IC161	C-11		

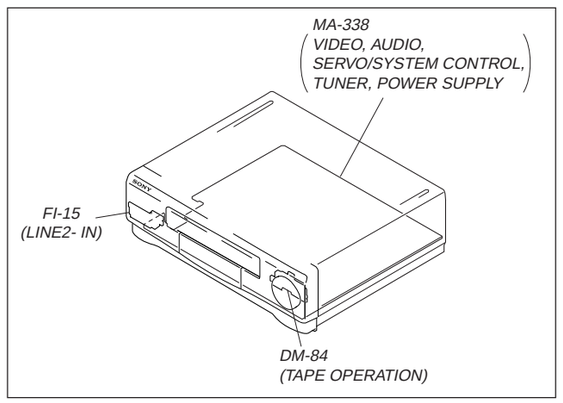
MA-338 BOARD(CONDUCTOR SIDE)



MA-338 (1/9) (REC/PB) SCHEMATIC DIAGRAM
— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram
- Refer to page 4-5 for printed wiring board.
- Refer to page 4-2 for waveforms.



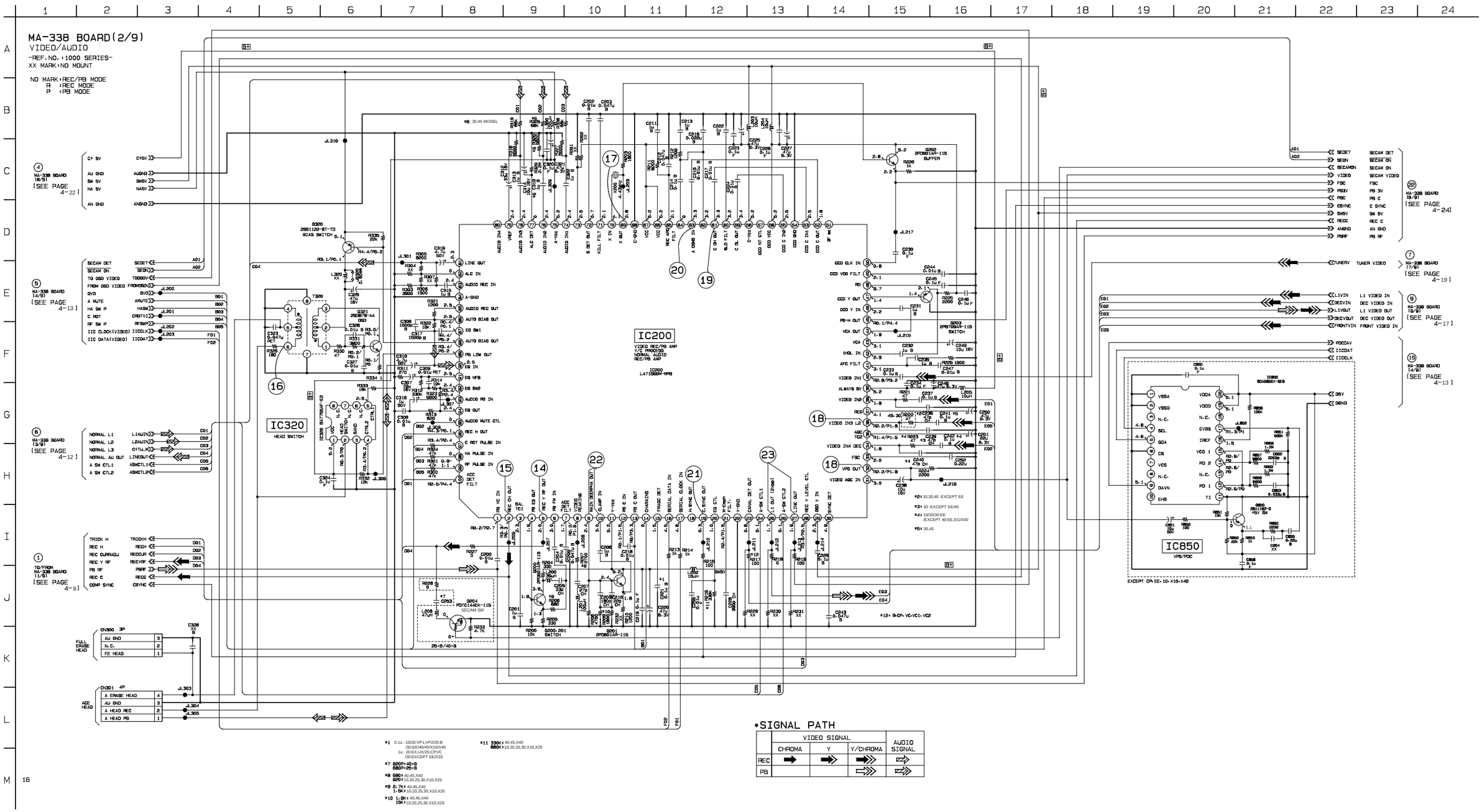


MA-338 (2/9) (VIDEO/AUDIO) SCHEMATIC DIAGRAM

— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram

- Refer to page 4-5 for printed wiring board.
- Refer to page 4-2 for waveforms.



*1 0.1u : 10/20/VP1/VP2/25/B
/30:EE/40/45/X10/X40
1u : 20:EX,UX/25:CP/C
/30:EXCEPT EE/X25

*7 820P:40•B
680P:25•B

*8 680 : 40,45,X40
820 : 10,20,25,30,X10,X25

*9 2.7K : 40,45,X40
1.5K : 10,20,25,30,X10,X25

*10 1.8K : 40,45,X40
15K : 10,20,25,30,X10,X25

*11 330K : 40,45,X40
680K : 10,20,25,30,X10,X25

*2 10,30,40 :EXCEPT EE

*3 30 :EXCEPT EE/45

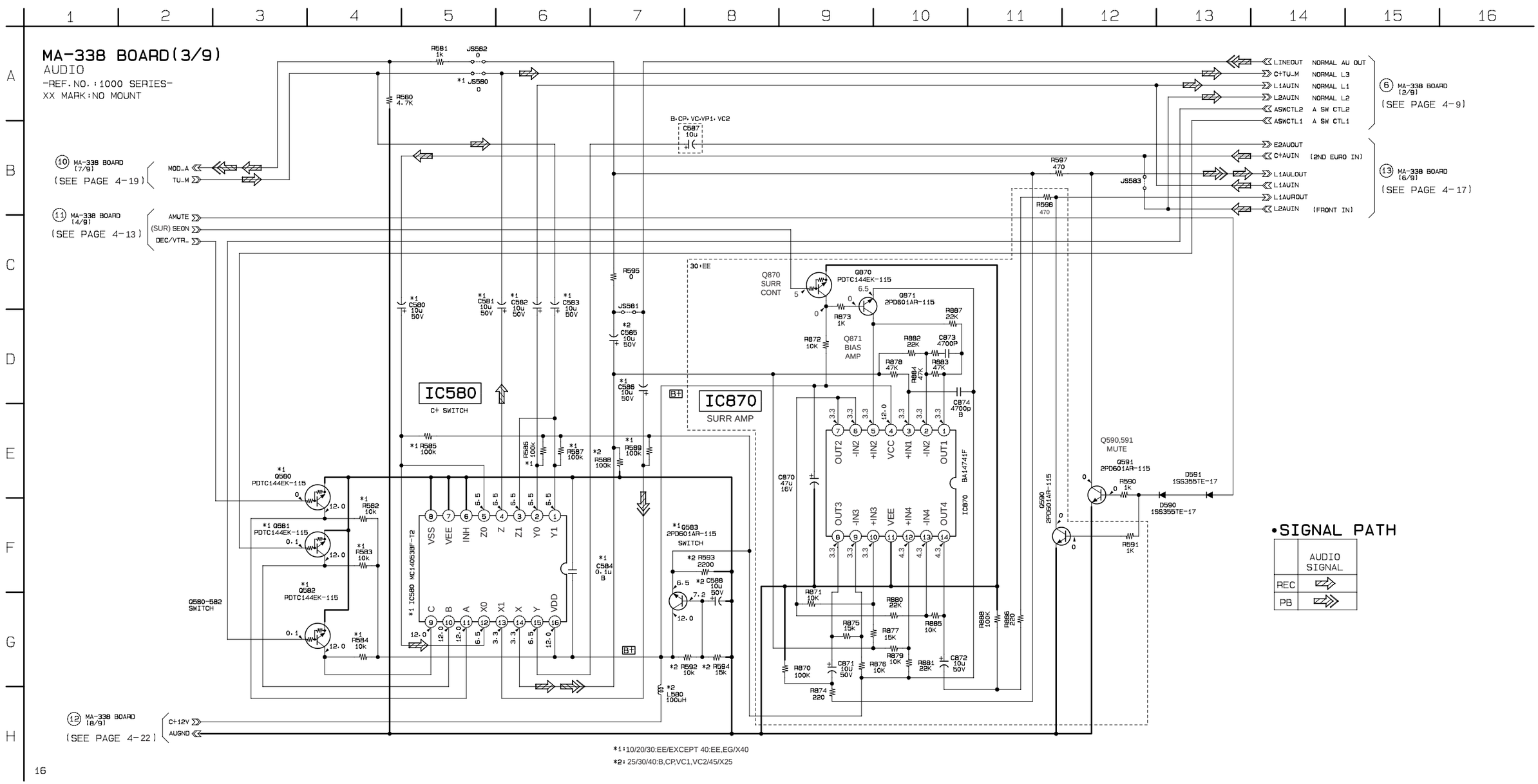
*4 10/20/30:EE
/EXCEPT 40:EE,EG/X40

*5 30,45

*12 B-CP-VC-VC1-VC2

MA-338 (3/9) (AUDIO) SCHEMATIC DIAGRAM
— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram
• Refer to page 4-5 for printed wiring board.



•SIGNAL PATH

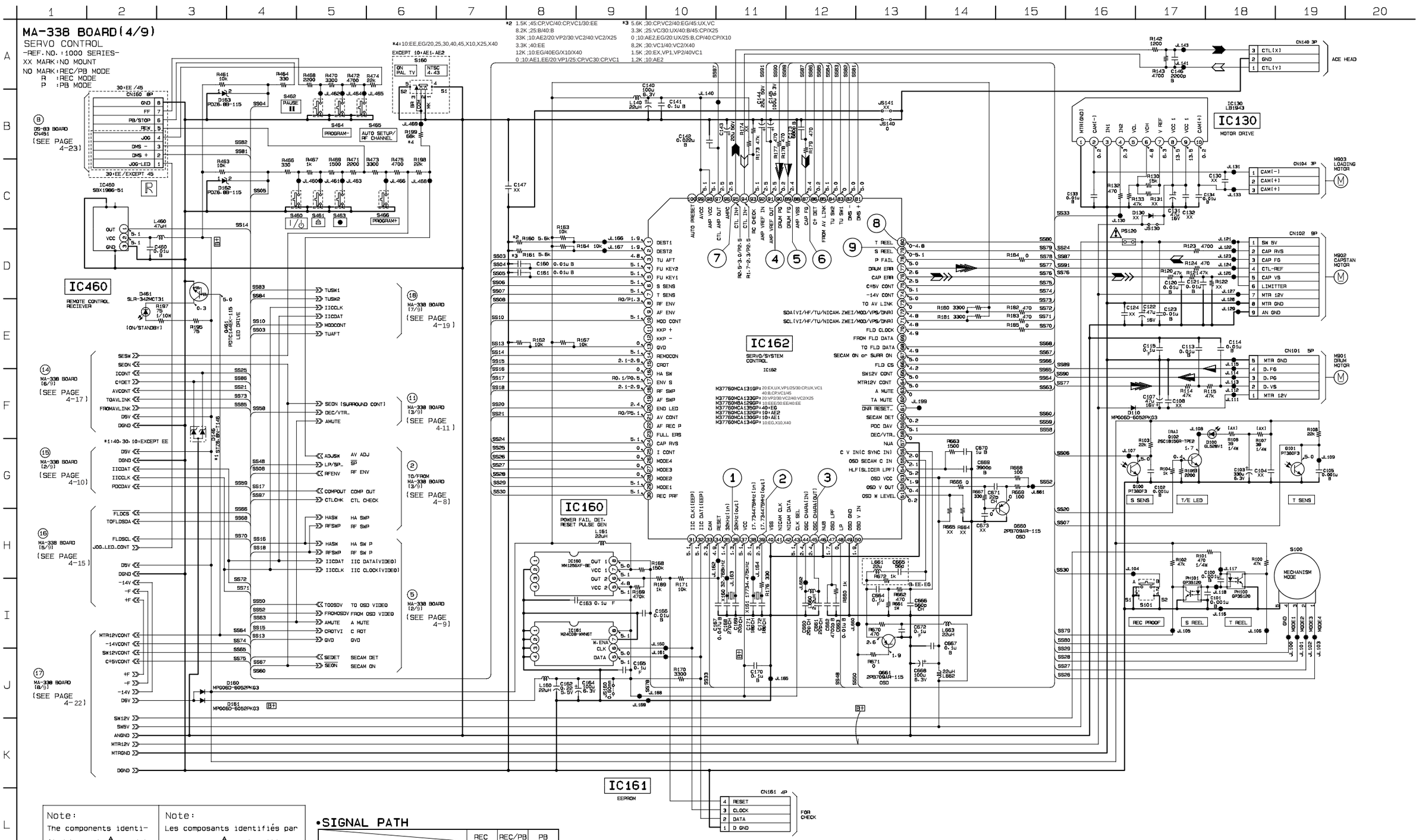
	AUDIO SIGNAL
REC	⇨
PB	⇨

MA-338 (4/9) (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram

- Refer to page 4-5 for printed wiring board.
- Refer to page 4-2 for waveforms.



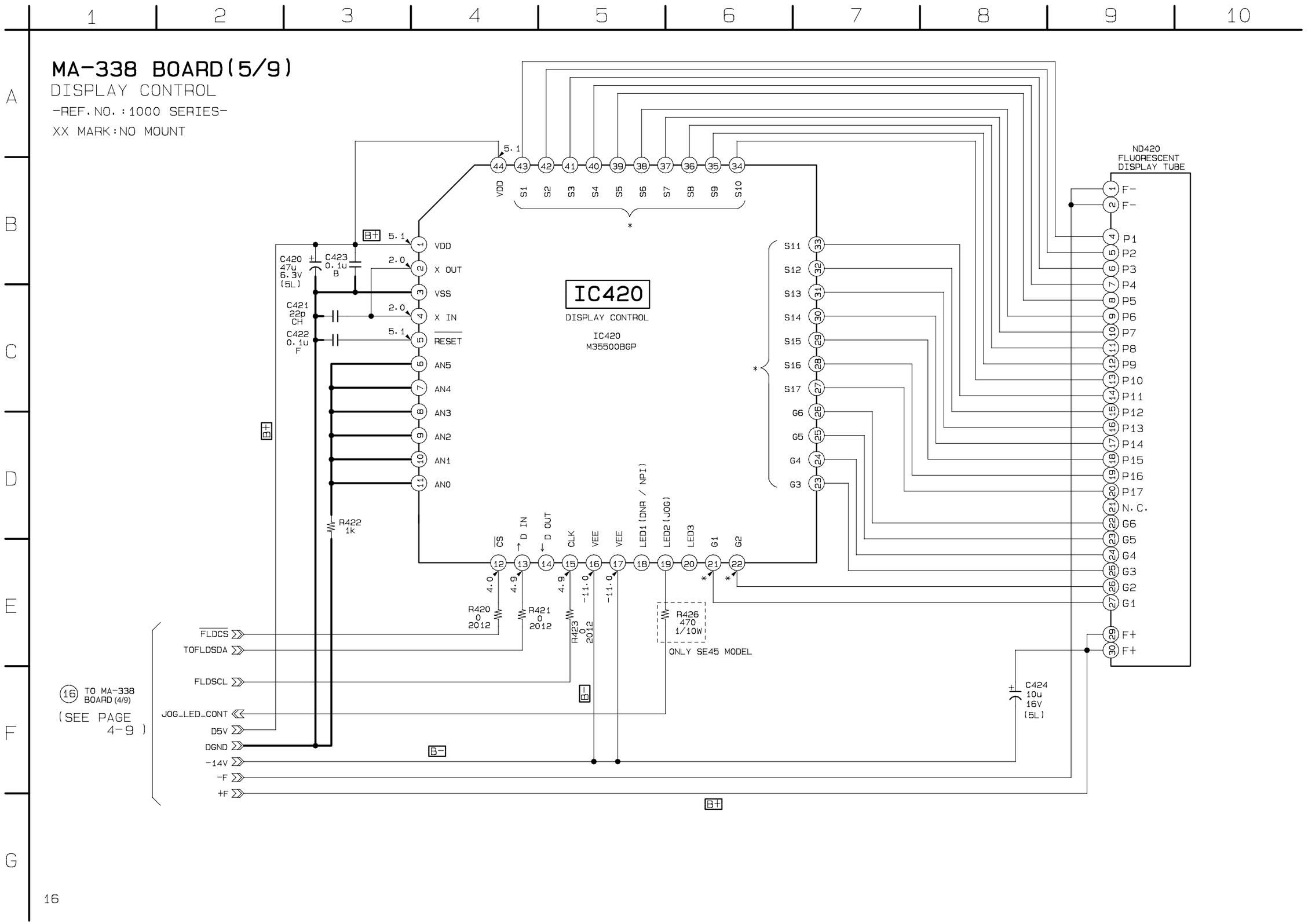
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

•SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶	
Drum servo (speed and phase)		▶	
Capstan speed servo	◀	▶	▷
Capstan servo (speed and phase)		▶»	

MA-338 (5/9) (DISPLAY) SCHEMATIC DIAGRAM
— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram
- Refer to page 4-5 for printed wiring board.
- Refer to page 4-2 for waveforms.

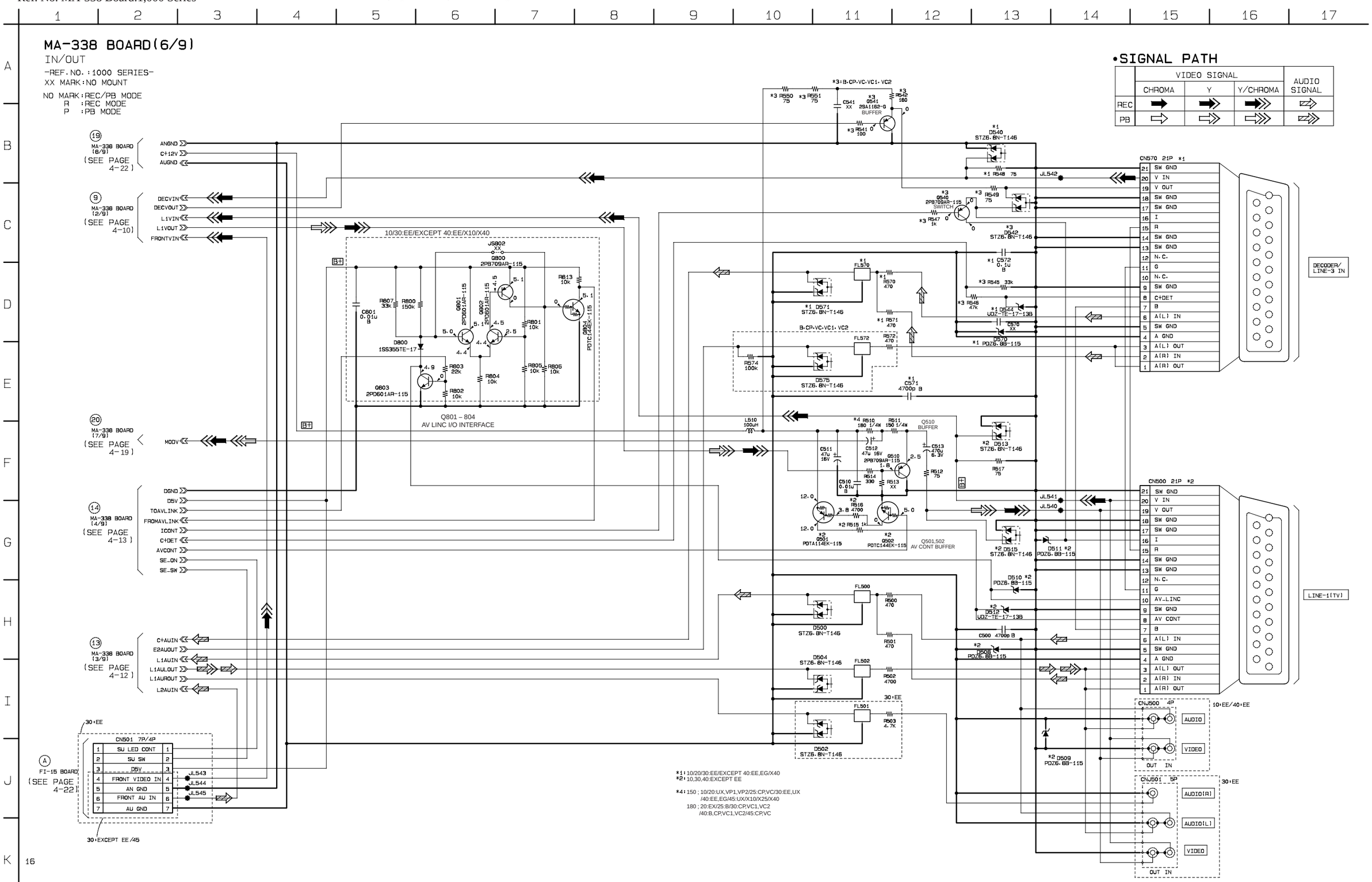


MA-338 (6/9) (INPUT/OUTPUT) SCHEMATIC DIAGRAM

— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram

• Refer to page 4-5 for printed wiring board.

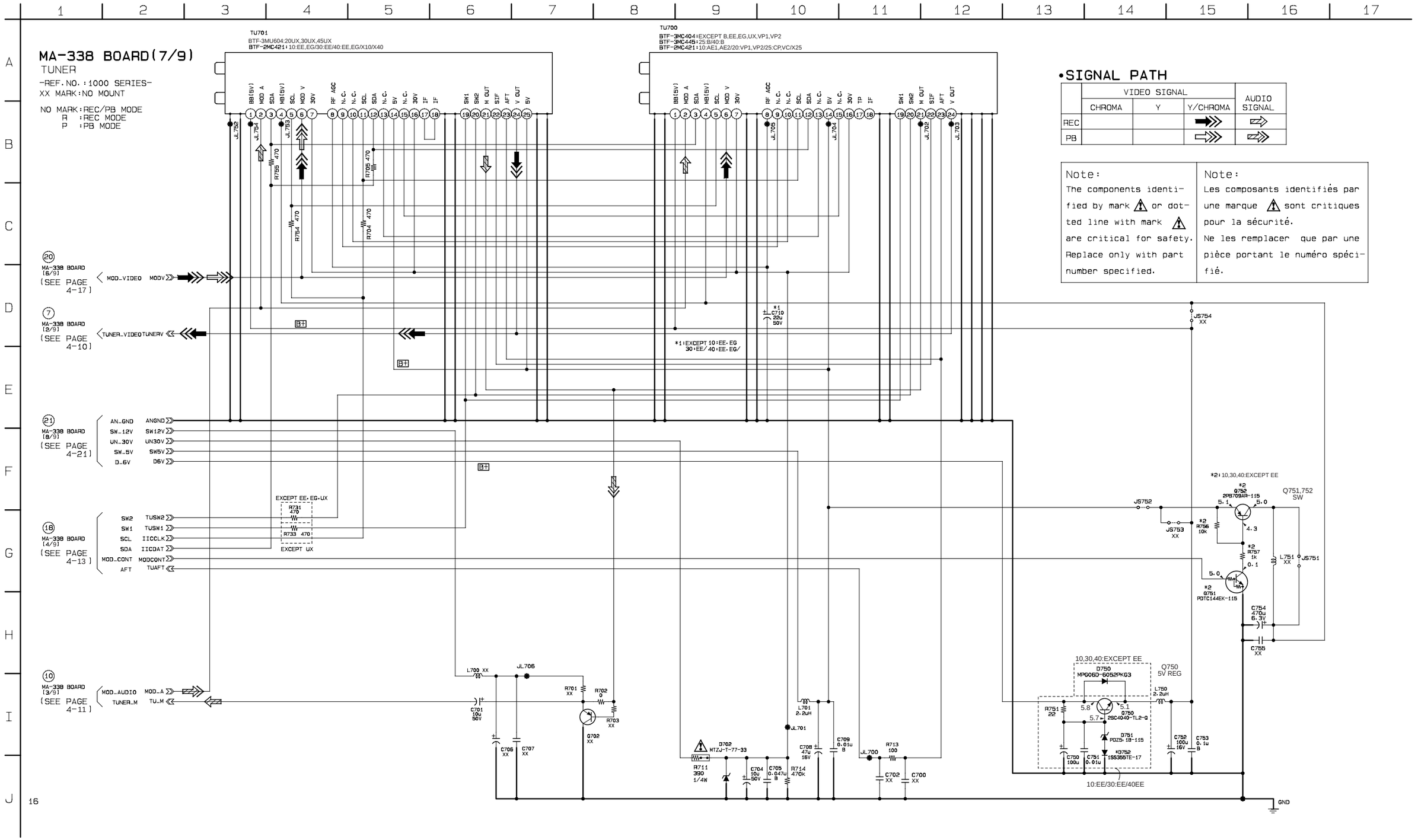


MA-338 (7/9) (TUNER) SCHEMATIC DIAGRAM

— Ref. No. MA-338 Board:1,000 Series —

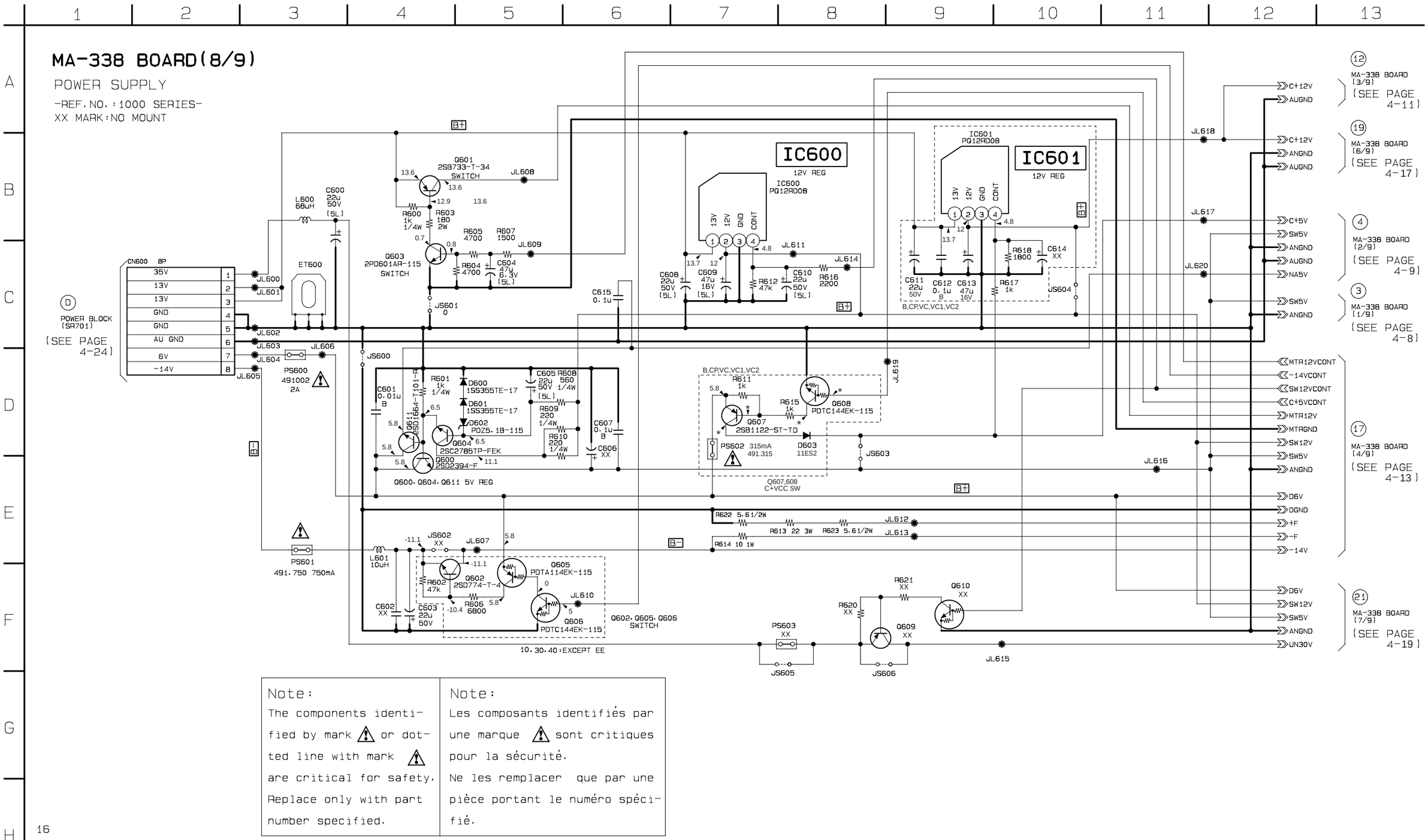
For schematic diagram

• Refer to page 4-5 for printed wiring board.



MA-338 (8/9) (POWER SUPPLY) SCHEMATIC DIAGRAM
— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram
• Refer to page 4-5 for printed wiring board.



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MA-338 (9/9) (SECAM VIDEO SIGNAL PROCESSOR) SCHEMATIC DIAGRAM

— Ref. No. MA-338 Board:1,000 Series —

For schematic diagram

• Refer to page 4-5 for printed wiring board.

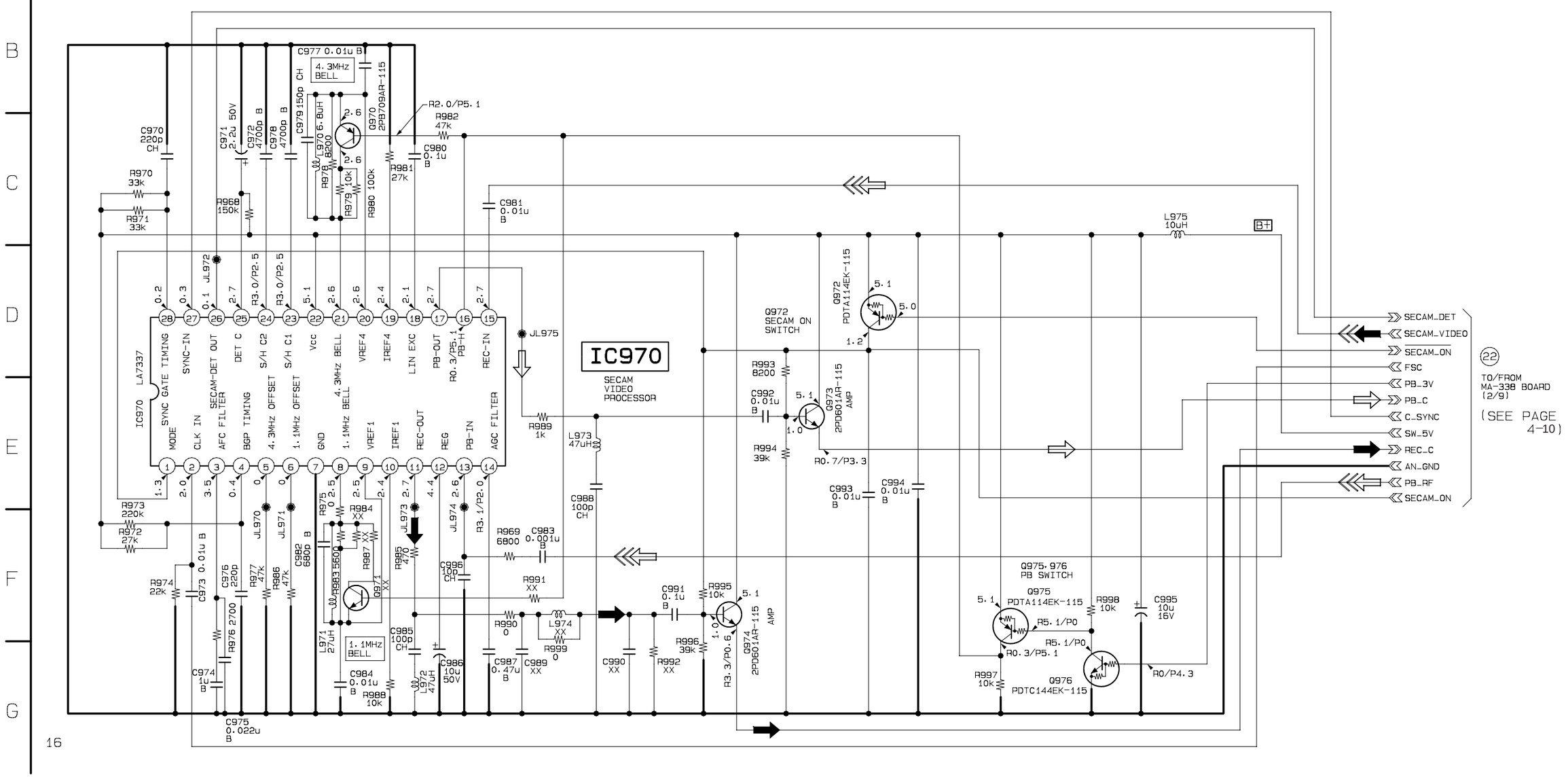
MA-338 BOARD(9/9) (SE25B, SE40B MODEL)

XX MARK : NO MOUNT

NO MARK : REC/PB MODE
R : REC MODE
P : PB MODE

•SIGNAL PATH

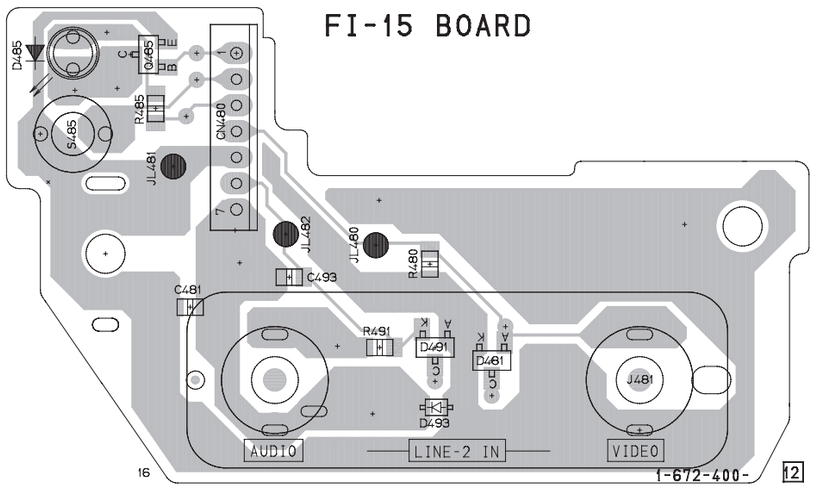
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		➡
PB	⇨		⇨

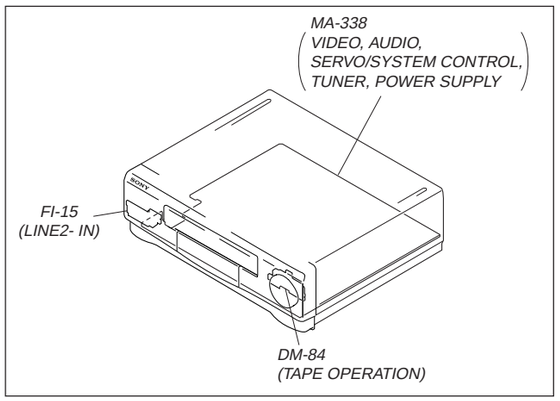


FI-15 (LINE-2 IN) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. FI-15 Board:2,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

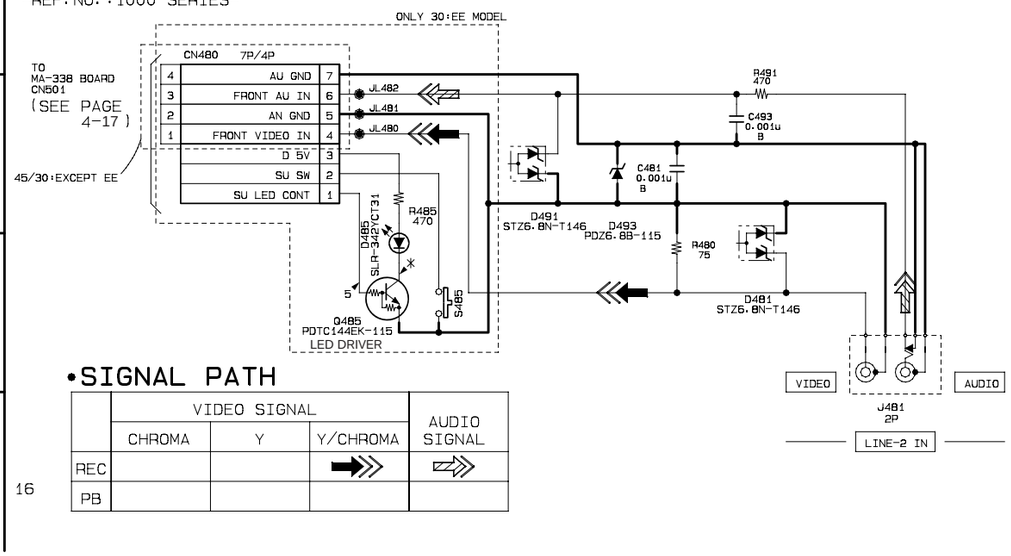




FI-15 BOARD (SE45, SE30 MODEL)

LINE-2 IN

-REF. NO. : 1000 SERIES-



•SIGNAL PATH

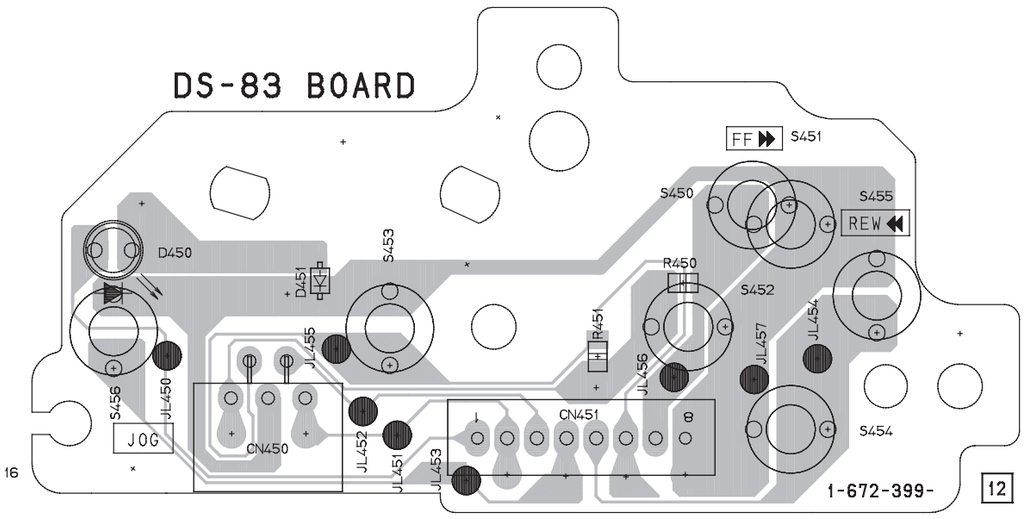
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇒	⇨
PB				

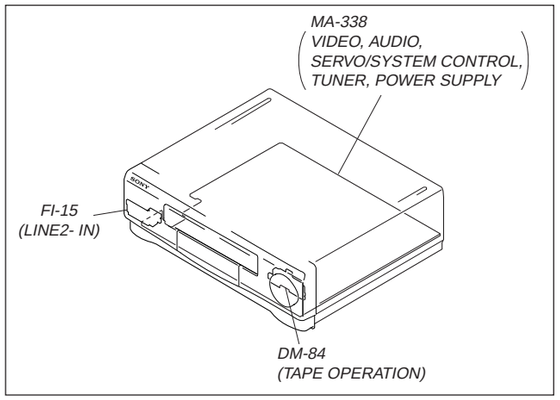
LINE-2 IN / **DUAL SHATTLE**
FI-15 **DS-83**

DS-83 (DUAL SHATTLE) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. DS-83 Board:3,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

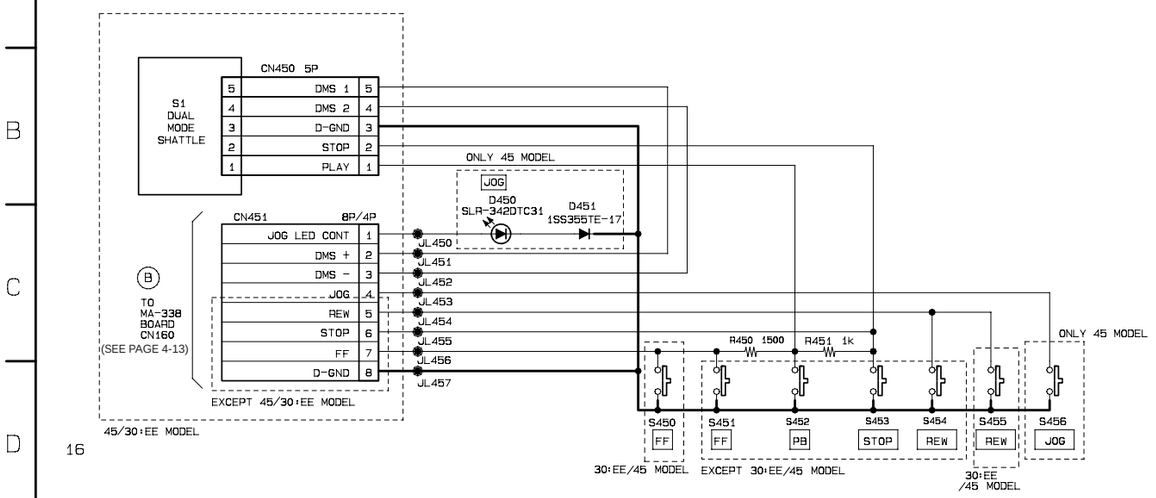




DS-83 BOARD

OPERATION SWITCHS

-REF. NO. : 1000 SERIES-

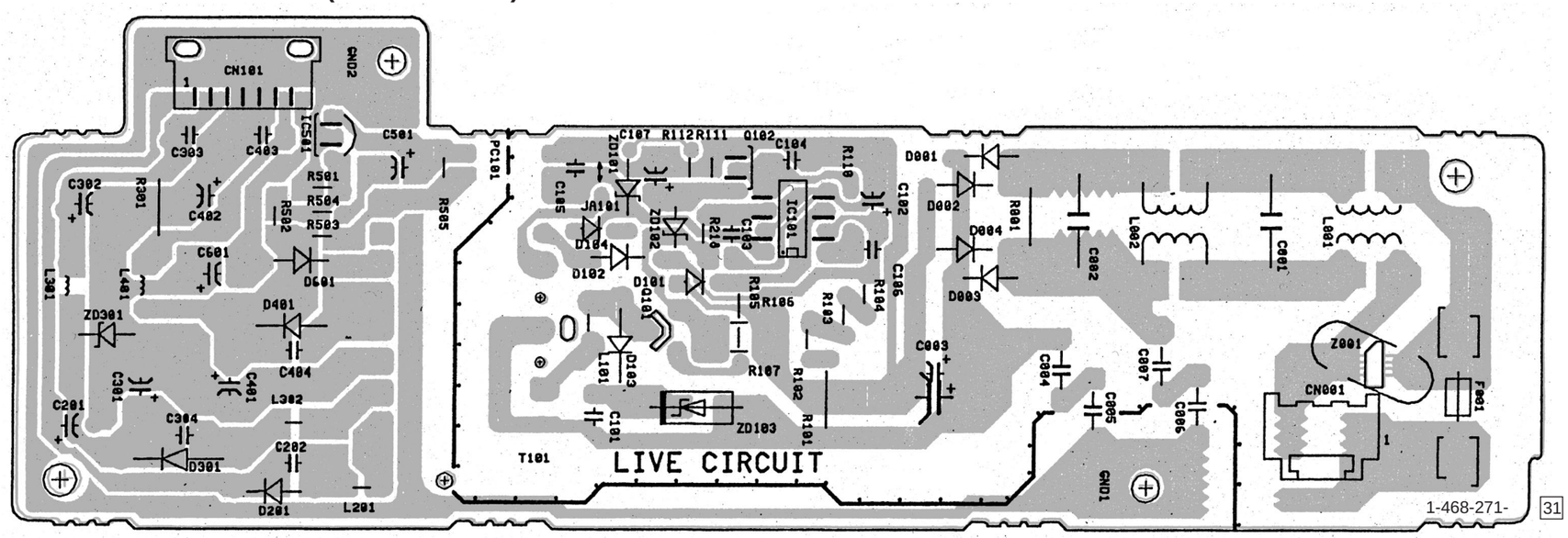


POWER BLOCK ETXNY165E1D (SWITCHING REGURATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

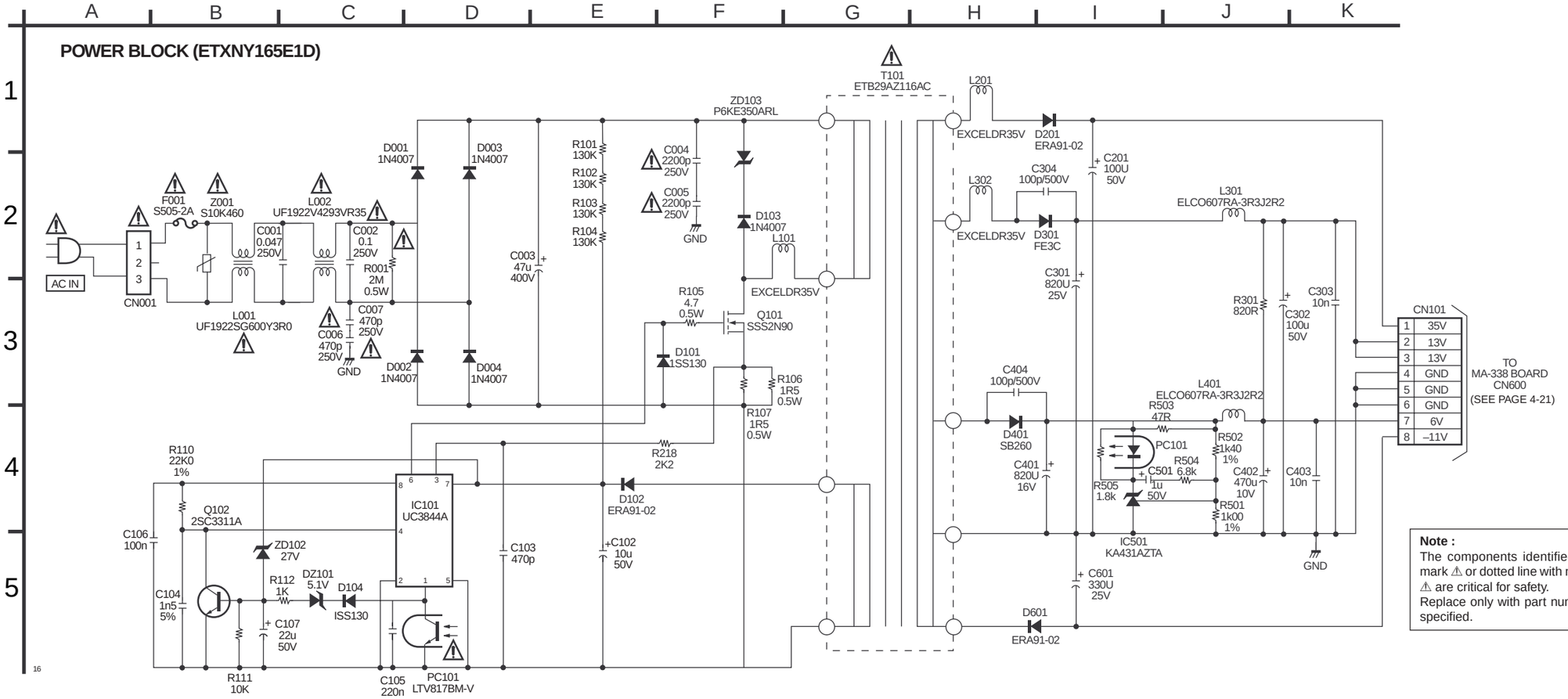
— Ref. No. SR701 Board:9,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

POWER BLOCK (ETXNY165E1D)



POWER BLOCK (ETXNY165E1D)



Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. SYSTEM CONTROL — VIDEO/RP BLOCK INTERFACE (MA-338 BOARD IC162)

Signal	Pin No.	I/O	STOP/ FF/REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC/PAUSE
RF SWP	MA-338 IC162 ⑱	O	*1	*1	*1	*1	*1	*1
QVD	MA-338 IC162 ⑬	O	L	L	L	*2	L	L
C SYNC	MA-338 IC162 ⑯	I	*3	*3	*3	*3	*3	*3

*1 Synchronized with drum rotation. 25 Hz 50% duty pluse.
*2 Normally “L”. “H” when video signal is not generated.
*3 Composite sync signal (positive).

5-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-338 BOARD IC162)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE LOADING	TAPE UNLOADING	PB	REC
CTL IN (+)	MA-338 IC162 ⑮	O	*7	*7	*7	*7	*7	*7	*1
DRM PG	MA-338 IC162 ⑩	I	*3	*3	*3	*3	*3	*3	*3
DRM FG	MA-338 IC162 ⑨	I	*4	*4	*4	*4	*4	*4	*4
CAP FG	MA-338 IC162 ⑦	I	H/L	*2	*2	*5	*5	*2	*2
CAP RVS	MA-338 IC162 ㉔	O	H/L	L	H	L	H	L	L
CAP ERR	MA-338 IC162 ㊱	O	L	*6	*6	*6	*6	*6	*6
DRM ERR	MA-338 IC162 ㊲	O	*6	*6	*6	*6	*6	*6	*6

*1. 25 Hz pulse.
*2. Pulse in period in proportion to tape speed.
*3. 25 Hz “H” pulse.
*4. 330 Hz pulse.
*5. Unstable period pulse.
*6. DC voltage 1 to 5V.
*7. Hi-Z (2.5 V)

5-3. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-338 BOARD IC162)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREADING	TAPE UNTHREADING	STOP	FF	REW	PB	REC
CAM	MA-338 IC162 ㉝	O	M	H/M	L/M	H/M	L/M	M	M	M	M	M
MODE 1	MA-338 IC162 ㉙	I	H	—	—	L	L	H	H	H	H	H
MODE 2	MA-338 IC162 ㉘	I	H	—	—	L	L	H	H	H	L	L
MODE 3	MA-338 IC162 ㉗	I	L	—	—	H	H	H	L	L	L	L
MODE 4	MA-338 IC162 ㉖	I	L	—	—	H	H	L	H	H	L	L
REC PRF	MA-338 IC162 ㉚	I	L	*1	*1	*1	*1	*1	*1	*1	*1	*1
T REEL	MA-338 IC162 ㊵	I	H/L	H/L	H/L	H/L	H/L	H/L	*2	*2	*2	*2
S REEL	MA-338 IC162 ㊴	I	H/L	H/L	H/L	*2	*2	H/L	*2	*2	*2	*2
END LED	MA-338 IC162 ⑳	O	L	*3	*3	*3	*3	*3	*3	*3	*3	*3
T SENS	MA-338 IC162 ⑦	I	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4
S SENS	MA-338 IC162 ⑥	I	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4

*1. “L” when erasing protection tab is bent. “H” when not bent.
*2. Pulse of period in proportion to reel rotating speed.
*3. Approx. 2 msec period “H” pulse.
*4. Normally “L”. 2 msec period “H” pulse when tape top or tape end is detected.
*5. Hi-Z

5-4. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-338 BOARD IC162)

Signal	Pin No.	I/O	I/O level
RESET	MA-338 IC162 ㉞	I	Normal “H” , “L” when seryvice Interruption is detected or restored.

5-5. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-338 BOARD IC162)

Signal	Pin No.	I/O	STOP/ FF/REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC/PAUSE
A MUTE	MA-338 IC162 ㊸	O	L	L	L	L	L	H

5-6. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTIONS (MA-338 BOARD IC162)

Pin No.	Pin Name	I/O	Function
1	DEST1	I	Destination identification input 1
2	DEST2	I	Destination identification input 2
3	TU AFT	I/O	AFT input to TUNER for station selection
4	FU KEY2	I	Function key input (9 keys)
5	FU KEY1	I	Function key input (9 keys)
6	S SENS	I	Tape end sensor input
7	T SENS	I	Tape top sensor input
8	RF ENV	I/O	Video RF envelop input
9	N.C.	—	N.C.
10	MOD CONT	O	RF modulator ON/OFF control
11	KKP+	I	KKP 2-phase pulse B input
12	KKP–	I	KKP 2-phase pulse A input
13	Q VD	O	Pseudo VD output
14	REMOCON	I	Remote control SIRCS signal input
15	COLOR ROT	O	Head azimuth information
16	HA SW P	O	SP/EP head switching signal
17	ENV SW	I	Identification signal of SP/EP head output comparison & detection
18	RF SW P	I/O	Video RF switching pulse output
19	N.C.	—	N.C.
20	END LED	O	End sensor LED output
21	AV CONT	O	EURO 21 pin AV CONT signal output
22	AF REC P	O	HiFi record control signal
23	FULL ERS	I/O	Full erase control signal for A DUB
24	CAP RVS	O	Inverted capstan signal
25	I CONT	O	EURO 21 pin-1 CONT signal output
26	MODE 4	I	Cam encode data 4
27	MODE 3	I	Cam encode data 3
28	MODE 2	I	Cam encode data 2
29	MODE 1	I	Cam encode data 1
30	REC PRF	I	Safety tab detection input
31	I2C CLK EEP	O	I2C clock (EEPROM control)
32	I2C DATA EEP	I/O	I2C data (EEPROM control)
33	CAM	O	Cam motor control signal
34	RESET	I	Reset input
35	Xc IN (32kHz)	I	Sub clock input
36	Xc OUT (32kHz)	O	Sub clock output
37	Vcc		Power supply input terminal (high speed mode: 4.0 to 5.5 V, low speed mode: 2.6 to 5.5 V)
38	X IN (17.734475MHz)	I	Main clock input
39	X OUT (17.734475MHz)	O	Main clock output
40	Vss		Ground terminal
41	N.C.	—	N.C.
42	N.C.	—	N.C.
43	CLK SEL	I	Selection of oscillation clock when reset is canceled. L: sub clock, H: main & sub clocks
44	OSC IN	I/O	Clock input for OSD character size
45	OSC OUT	I/O	Clock output for OSD character size
46	NUB		Connected to Ground
47	OSD LPF	I/O	External filter that doubles the fsc, is connected to this terminal
48	LP	O	L at SP
49	OSD GND		Ground terminal of OSD/slicer
50	OSD V IN	I	Video signal input for OSD overlay

Pin No.	Pin Name	I/O	Function
51	OSD W LEVEL	I	OSD white level input
52	OSD V OUT	O	OSD video signal output
53	OSD Vcc		Power supply input terminal for OSD/slicer (4.75 V to 5.25 V)
54	HLF	I/O	LPF connection terminal for slicer/AFC (This terminal is used as the HLF terminal when C. Video is input to pin-56.)
55	OSD SECAM C IN	I	Color signal input for SECAM OSD
56	C. VIDEO IN	I	Video signal input for tuner's station selection, OSD and servo sync signal detection (after passing filter)
57	NUA		Connected to Ground
58	DEC/VTR	O	Decoder/VTR switching
59	PDC DAV	I	PDC/VPS signal reception identification input
60	SECAM DET	I	SECAM identification input
61	DNR RESET	O	DNR IC reset signal
62	TA MUTE	O	Tuner audio mute signal output
63	A MUTE	O	Audio mute signal output
64	MTR 12V CONT.	O	Motor 12 V power control signal
65	SW 12V CONT.	O	SW 12 V power control signal
66	FLD CS	O	Chip selection signal for display tube driver
67	$\overline{\text{SECAM ON}}$/SUR ON	O	SECAM ON signal/surround audio control (switched by destination)
68	FLD OUT	O	Serial data out CH0 (FLD)
69	FLD IN	I	Serial data in CH0 (FLD)
70	FLD CLK	O	Serial clock CH0 (FLD)
71	SCL	I/O	I2C clock (video/HiFi/tuner/ARC/modulator/VPS/DNR control)
72	SDA	I/O	I2C data (video/HiFi/tuner/ARC/modulator/VPS/DNR control)
73	AV-LINK OUT	O	AV-LINK data output for communication
74	–14V CONT	O	Power save control (equivalent of pin-98 save CONT 1)
75	C+ 5V CONT	O	Power save control (equivalent of pin-98 save CONT C+)
76	CAP ERROR	O	Capstan error output
77	DRUM ERROR	O	Drum error output
78	P FAIL	I	Power failure detection input
79	S REEL	I	Supply reel sensor input
80	T REEL	I	Tape up reel sensor input
81	DMS+	I	DMS 2-phase pulse 1 input
82	DMS–	I	DMS 2-phase pulse 2 input
83	TU SW1	O	Turner system BG/L selection signal
84	TU SW2	O	Turner system BGL/L selection signal
85	AV-LINK IN	I	Data inpu for AV-LINK communication
86	C+ DET	I	CANAL + connection identification input
87	CAP FG	I	Capstan FG input
88	AMP Vss		Ground terminal for analog amplifier (connected to Vss)
89	DRUM FG	I	Drum FG input
90	DRUM PG	I	Drum PG input
91	AMP VREF OUT		Analog amplifier reference power supply output terminal
92	AMP VREF IN		Analog amplifier reference power supply output terminal
93	RC CHECK	I	Input for RC setting
94	CTL –IN	I/O	CTL signal input/output terminal
95	CTL +IN	I/O	CTL signal input/output terminal
96	AMP C		CTL amplifier AC Ground terminal
97	CTL AMP OUT	O	CTL amplifier output
98	AMP Vcc		Power supply input terminal for analog amplifier (connected to Vcc)
99	AVcc		Power supply input and reference voltage input to A-D converter
100	AUTO PRESET	O	H at Auto preset

5-7. MODE CONTROL PIN FUNCTIONS (MA-338 BOARD IC420)

Pin No.	Pin Name	I/O	Function
1	VDD		D5V
2	X OUT	O	X' tal out
3	VSS		Ground.
4	X IN	I	X' tal in
5	$\overline{\text{RESET}}$	I	RESET input.
6	AN5		Ground.
7	AN4		Ground.
8	AN3		Ground.
9	AN2		Ground.
10	AN1		Ground.
11	AN0		Ground.
12	$\overline{\text{CS}}$	O	FLD chip select signal out.
13	D IN	I	FLD IIC BUS (data) input.
14	D OUT	O	Not connect.
15	CLK	O	FLD clock.
16	VEE		–14V
17	VEE		–14V
18	LED1	O	LED control signal input.
19	LED2	O	JOG LED control signal output.
20	NC		Not Connect.
21	G1	O	Grid terminal 1.
22	G2	O	Grid terminal 2.
23	G3	O	Grid treminal 3.
24	G4	O	Grid treminal 4.
25	G5	O	Grid treminal 5.
26	G6	O	Grid treminal 6.
27	S17	O	Segment terminal 17.
28	S16	O	Segment terminal 16.
29	S15	O	Segment terminal 15.
30	S14	O	Segment terminal 14.
31	S13	O	Segment terminal 13.
32	S12	O	Segment terminal 12.
33	S11	O	Segment terminal 11.
34	S10	O	Segment terminal 10.
35	S9	O	Segment terminal 9.
36	S8	O	Segment terminal 8.
37	S7	O	Segment terminal 7.
38	S6	O	Segment terminal 6.
39	S5	O	Segment terminal 5.
40	S4	O	Segment terminal 4.
41	S3	O	Segment terminal 3.
42	S2	O	Segment terminal 2.
43	S1	O	Segment terminal 1.
44	VDD		D5V

SECTION 6
ADJUSTMENTS

6-1 MECHANICAL ADJUSTMENTS

For the mechanical adjustments, please refer to the "VHS MECHANICAL ADJUSTMENT MANUAL Ⅵ (S MECHANISM)" (9-921-647-11).

6-2. ELECTRICAL ADJUSTMENTS

See the adjusting part location diagram from on page 6-6 for the adjustment.

2-1. PREPARATION BEFORE ADJUSTMENT

2-1-1. Equipment Required

The measuring instruments used for this alignment include:

1) Monitor TV
2) Oscilloscope, dual-trace, bandwidth of 30 MHz or more, with delay mode (A probe 10:1 should be used unless otherwise specified.)
3) Frequency counter
4) PAL Pattern generator
5) Remote commander
6) Digital voltmeter
7) Audio generator
8) Audio level meter
9) Audio attenuator
10) Alignment tapes
    KRV-51P (PAL) Part No. : 8-192-955-57

2-1-2. Equipment Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

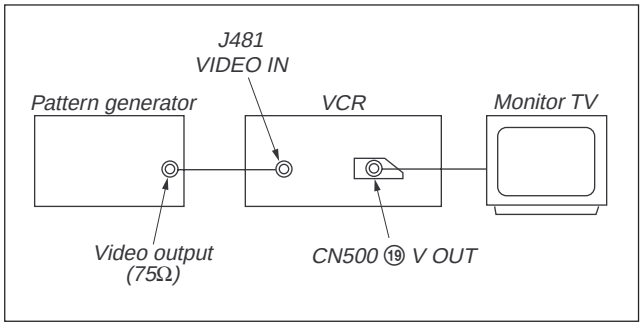


Fig. 6-2-1

2-1-3. Set-up of Adjustment

In this adjustment, PAL pattern generator is connected with LINE-2 input terminal. When check to tuner, connected AERIAL terminal. Check that the synchronizing signal of the Y signal has an amplitude of approximately 0.7 V and that the burst signal has an amplitude of approximately 0.3 V and its waveform is flat. And check that the level ratio of burst signal to "red" signal is 0.30 : 0.66. The video signal (color bar) used for electrical aligning this unit is shown in Fig. 6-2-2.

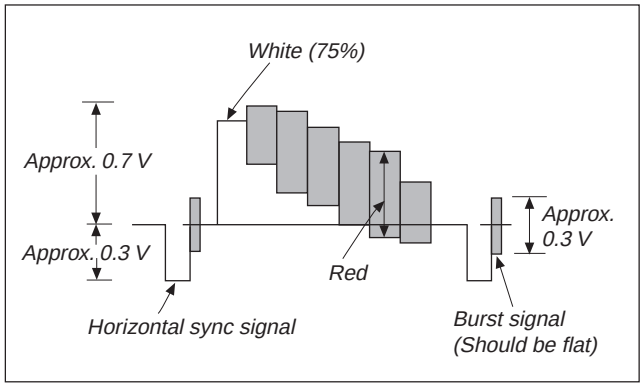


Fig. 6-2-2 Color Bar Signals of Pattern Generator

2-1-4. Alignment Tape

• Contents of KRV-51P

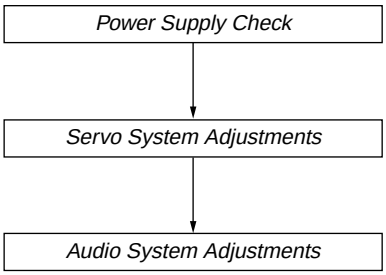
	Mode	Period	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	7 minutes	Color bar	400Hz (L/R)	400Hz
2		3 minutes	Monoscope		
3	LP	7 minutes	Color bar		
4		3 minutes	Monoscope		

2-1-5. Input/Output Levels and Impedance

Video input: LINE-1 (TV)/LINE-2 IN/LINE-3 IN
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Video output: LINE-1 (TV)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input: LINE-1 (TV)/LINE-2 IN/LINE-3 IN
Input level: –7.5 dBs
(0 dBs= 0.775 Vrms)
Input impedance: more than 47 kilohms
Audio output: LINE-1 (TV)
Standard level: –7.5 dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms

2-1-6. Adjustment Sequence

The adjustments should be performed in the following sequence.



2-2. POWER SUPPLY CHECK

2-2-1. Output Voltage Check (MA-338 Board)

Mode	STANDBY
+30 V Check	
Measurement point	CN600 pin ①
Specified value	31.0 to 39.0 V
Mode	E-E
+6 V Check	
Measurement point	Corrector of Q600
Specified value	5.56 to 6.25 V

–11 V Check	
Measurement point	Corrector of Q602
Specified value	–13.5 to – 9.5 V
+12 V Check	
Measurement point	IC600 pin ②
Specified value	11.7 to 12.3 V
+5 V Check	
Measurement point	Emitter of Q600
Specified value	4.8 to 5.4 V
MTR12 V Check	
Measurement point	Corrector of Q601
Specified value	12.6 to 14.6 V

[Check Method]

1) Each of these supply voltages must meet its specified value.

2-3. SERVO SYSTEM CHECK

2-3-1. RF Switching Position Adjustment (MA-338 Board)

[Adjustment Purpose]

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the link will appear on the screen and the screen will be disrupted, etc.

Mode	Playback
Signal	Alignment tape: SP color bar portion
Measurement point	CH1: CN262 pin ① (PB RF) CH2: CN262 pin ② (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	Remote commander CH+/–
Specified value	A=minimize

[Adjustment Method]

1) Playback the alignment tape.
2) Short CN262 pin ⑤ to Ground.
3) Check that "A P" is indicated on FL display.
4) Adjust so that part A becomes minimized at CH +/–.
5) Write data in EEPROM by pressing PAUSE button.
6) The display "A P" disappears and then the Adjustment mode terminates.

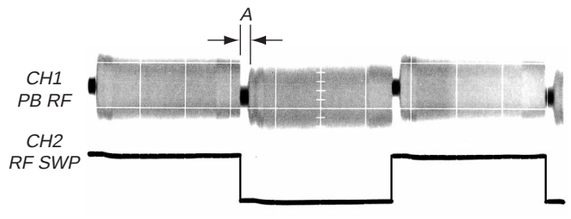


Fig. 6-2-3

2-4. AUDIO SYSTEM ADJUSTMENT

[Connecting Instruments]

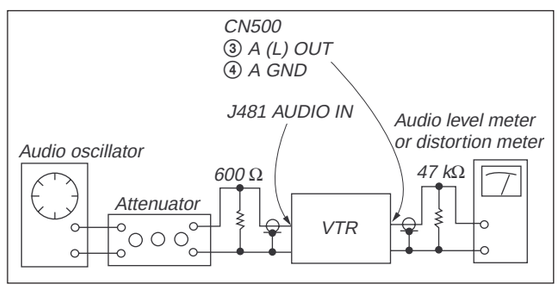


Fig. 6-2-3

2-4-1. Normal Audio System Adjustment

- Make adjustment in the SP mode unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

2-4-2. ACE Head Adjustment

Refer to the VHS mechanical adjustment manual Ⅵ (S MECHANISM) (9-921-647-11).

2-4-3. E-E Output Level Check

[Adjustment purpose]

Confirm that the output level adjust the reference input is within the specification.

Mode	E-E
Signal	400 Hz, –6.3 dBs
Measurement point	CN500 Pin ③
Measuring instrument	Audio level meter
Specified value	–6.3 ± 2 dBs

[Check Method]

1) Input signal of 400 Hz and –6.3 dBs to the J480.
2) Check that the audio output level is –6.3 ± 2 dBs.

2-4-4. Frequency Response Check

[Adjustment purpose]

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –26.3 dBs 4 kHz, –26.3 dBs
Measurement point	CN500 Pin ③
Measuring instrument	Audio level meter
Specified value	–6 dB to +4 dB

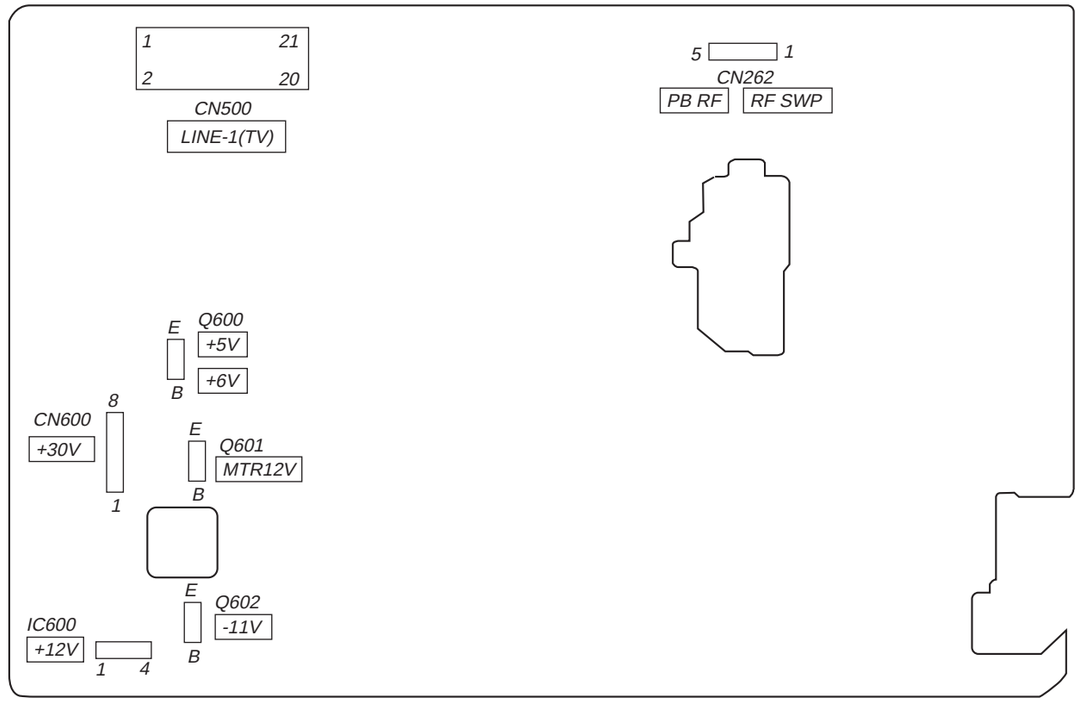
Note: Tape path adjustment must have been completed.

[Confirmation Method]

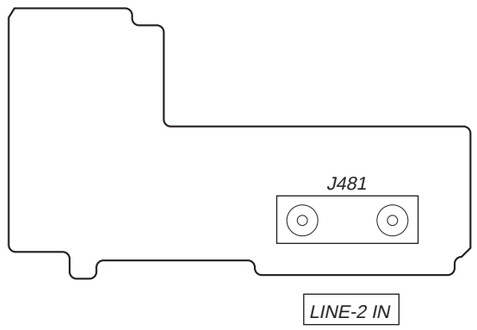
1) Supply a signal of 400 Hz, –26.3 dBs to J481 AUDIO IN.
2) Connect the audio level meter to CN500 Pin ③.
3) Adjust the attenuator so that the audio level meter will indicate –26.3 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 4 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 4 kHz.
7) Confirm that the 4 kHz playback output level within a range of the 400 Hz playback output level –6 dB to +4 dB.

2-5. ADJUSTING PARTS LOCATION DIAGRAM

MA-338 BOARD (CONDUCTOR SIDE)



FI-15 BOARD (CONDUCTOR SIDE)



SLV-SE10/SE20/SE25/SE30/SE40/SE45/SX10/SX25/SX40

SECTION 7
REPAIR PARTS LIST

7-1. EXPLODED VIEWS

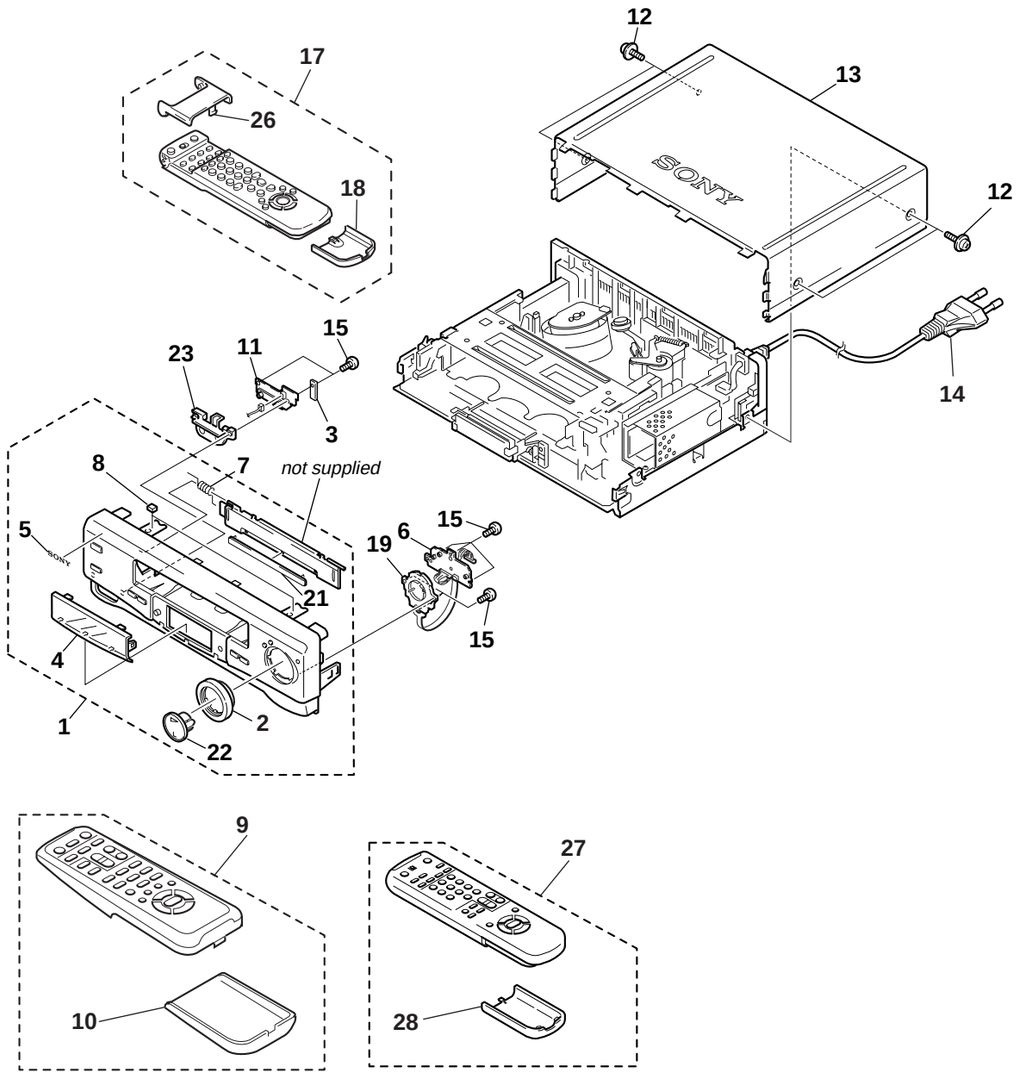
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  X10 : SX10
  X25 : SX25
  X40 : SX40

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

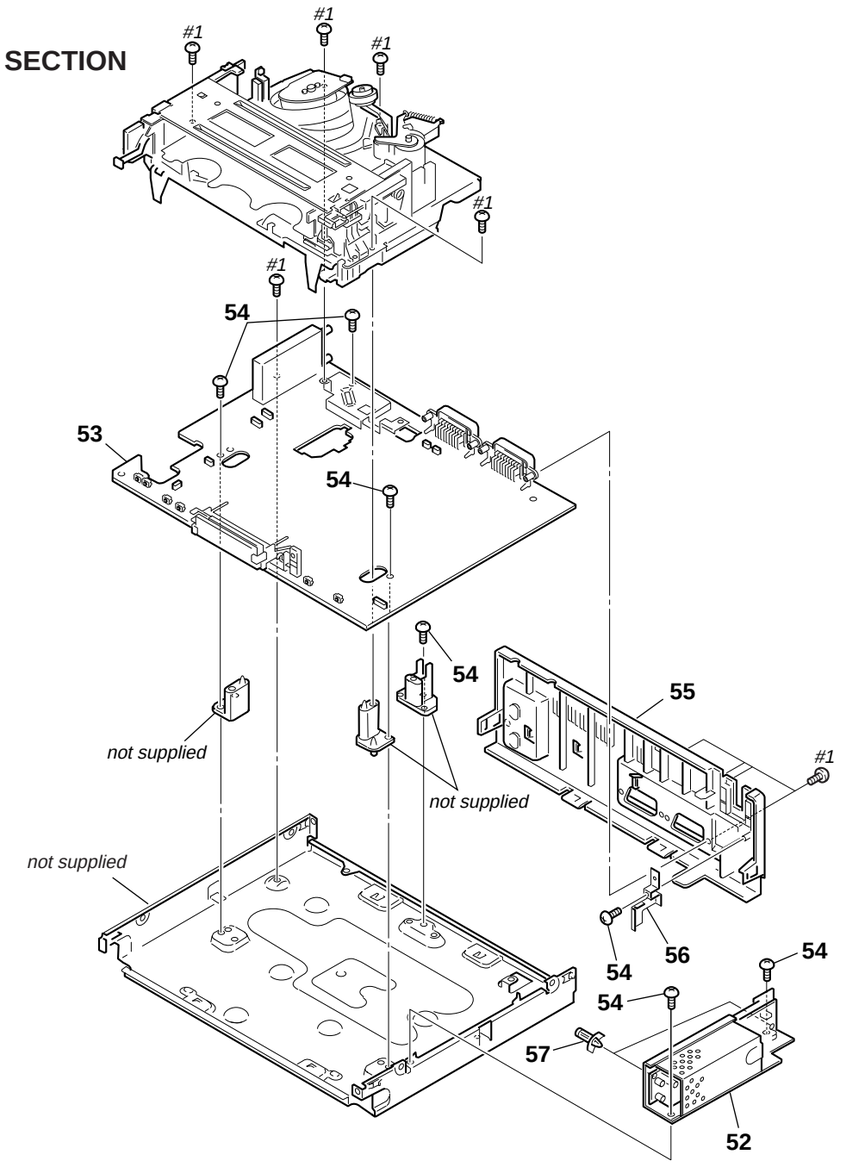
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

7-1-1. FRONT PANEL AND UPPER CASE SECTION



Ref. No.	Part No.	Description	Remarks
1	X-3949-237-1	PANEL ASSY, FRONT (45:UX)	
1	X-3949-238-1	PANEL ASSY, FRONT (45:VC)	
1	X-3949-239-1	PANEL ASSY, FRONT (45:CP)	
1	X-3949-240-1	PANEL ASSY, FRONT (40:VC1,VC2)	
1	X-3949-241-1	PANEL ASSY, FRONT (40:B)	
1	X-3949-242-1	PANEL ASSY, FRONT (40:CP)	
1	X-3949-243-1	PANEL ASSY, FRONT (30:UX)	
1	X-3949-244-1	PANEL ASSY, FRONT (30:VC1,VC2)	
1	X-3949-245-1	PANEL ASSY, FRONT (30:CP)	
1	X-3949-246-1	PANEL ASSY, FRONT (X25)	
1	X-3949-247-1	PANEL ASSY, FRONT (25:VC)	
1	X-3949-248-1	PANEL ASSY, FRONT (25:B)	
1	X-3949-249-1	PANEL ASSY, FRONT (25:CP)	
1	X-3949-250-1	PANEL ASSY, FRONT (20:EX,UX)	
1	X-3949-251-1	PANEL ASSY, FRONT (20:VP1,VP2)	
1	X-3949-252-1	PANEL ASSY, FRONT (10:AE1,AE2)	
1	X-3949-253-1	PANEL ASSY, FRONT (40:EG)	
1	X-3949-254-1	PANEL ASSY, FRONT (X40)	
1	X-3949-255-1	PANEL ASSY, FRONT (40:EE)	
1	X-3949-256-1	PANEL ASSY, FRONT (30:EE)	
1	X-3949-257-1	PANEL ASSY, FRONT (10:EE,EG)	
1	X-3949-258-1	PANEL ASSY, FRONT (X10)	
2	3-053-425-01	RING(S), BUTTON(EXCEPT 25:B/30:EE/40:B/45)	
2	3-053-425-11	RING(S), BUTTON (25:B/40:B)	
2	3-053-232-01	RING,JOG (30:EE/45)	
3	3-053-421-01	PLATE,JACK GROUND (30,45)	
4	3-053-417-01	PLATE, FROSTED (EXCEPT 40:B)	
4	3-053-417-11	PLATE, FROSTED (40:B)	
5	3-053-436-01	EMBLEM (NO.5), SONY	
* 6	A-6794-659-A	DS-83C BOARD, COMPLETE (45)	
* 6	A-6794-661-A	DS-83A BOARD, COMPLETE(EXCEPT 30:EE,45)	
* 6	A-6794-663-A	DS-83B BOARD, COMPLETE (30:EE)	
7	3-953-432-01	SPRING (GE), FL	
8	3-989-626-11	CUSHION (PS), RUBBER	
9	1-418-007-11	COMMANDER, STANDARD (RMT-V256) (10,X10,30:EE)	
9	1-418-007-21	COMMANDER, STANDARD(RMT-V256A)(40:EE)	
10	3-709-322-01	COVER, BATTERY (10,X10,30:EE,40:EE)	
* 11	A-6794-658-A	FI-15B BOARD, COMPLETE (30/45:EXCEPT EE)	
* 11	A-6794-662-A	FI-15A BOARD, COMPLETE (30:EE)	
12	3-710-901-11	SCREW (TP3 × 8), CASE	
13	3-979-384-21	CASE(E), UPPER (EXCEPT EX,UX,X10,X25,X40)	
13	3-979-384-61	CASE(E), UPPER (EX,UX,X10,X25,X40)	
⚠14	1-777-854-21	CORD, POWER	
15	4-921-277-41	SCREW (B2.6 × 8), TAPPING, BIND	
17	1-418-010-11	COMMANDER, STANDARD (RMT-V259) (30:CP,UX,VC2,VC1/45)	
18	3-709-431-01	COVER, REMOTE CONTROL BATTERY (30:CP,UX,VC2,VC1/45)	
19	1-762-844-21	SWITCH, ROTARY (30:EE/45)	
21	3-053-419-01	ESCUTCHEON, CASSETTE (40:CP,EE,EG,VC2,VC1/X40/45)	
21	3-053-419-11	ESCUTCHEON, CASSETTE (40:B)	
21	3-053-419-21	ESCUTCHEON, CASSETTE (10:AE1,AE2/20/25:CP,VC,X25/30:UX,CP,VC1,VC2)	
21	3-053-419-31	ESCUTCHEON, CASSETTE (25:B)	
21	3-053-419-41	ESCUTCHEON, CASSETTE(10:EE,EG,X10/30:EE)	
22	3-053-426-01	BUTTON (S), CENTER (EXCEPT 25:B10/30:E/40:B/45)	
22	3-053-426-11	BUTTON (S), CENTER (25:B/40:B)	
22	3-053-231-01	BUTTON, CENTER (30:EE/45)	
23	3-053-418-01	COVER (2P), JACK (30,45)	
26	3-709-430-01	COVER, REMOTE CONTROL (30:UX,CP,VC1,VC2/45)	
27	1-418-008-11	COMMANDER, STANDARD (RMT-V257) (20:VP1,VP2)	
27	1-418-008-21	COMMANDER, STANDARD (RMT-V257A) (25:B)	
27	1-418-008-31	COMMANDER, STANDARD (RMT-V257B) (20:EX,UX/25:CP,VC,X25,40:CP,EG,VC1,VC2/X40)	
27	1-418-008-41	COMMANDER, STANDARD (RMT-V257C) (40:B)	
28	3-709-433-01	COVER, REMOTE CONTROL BATTERY (20/25/X25/40:B,CP,VC1,VC2,EG/X40)	

7-1-2. CHASSIS SECTION



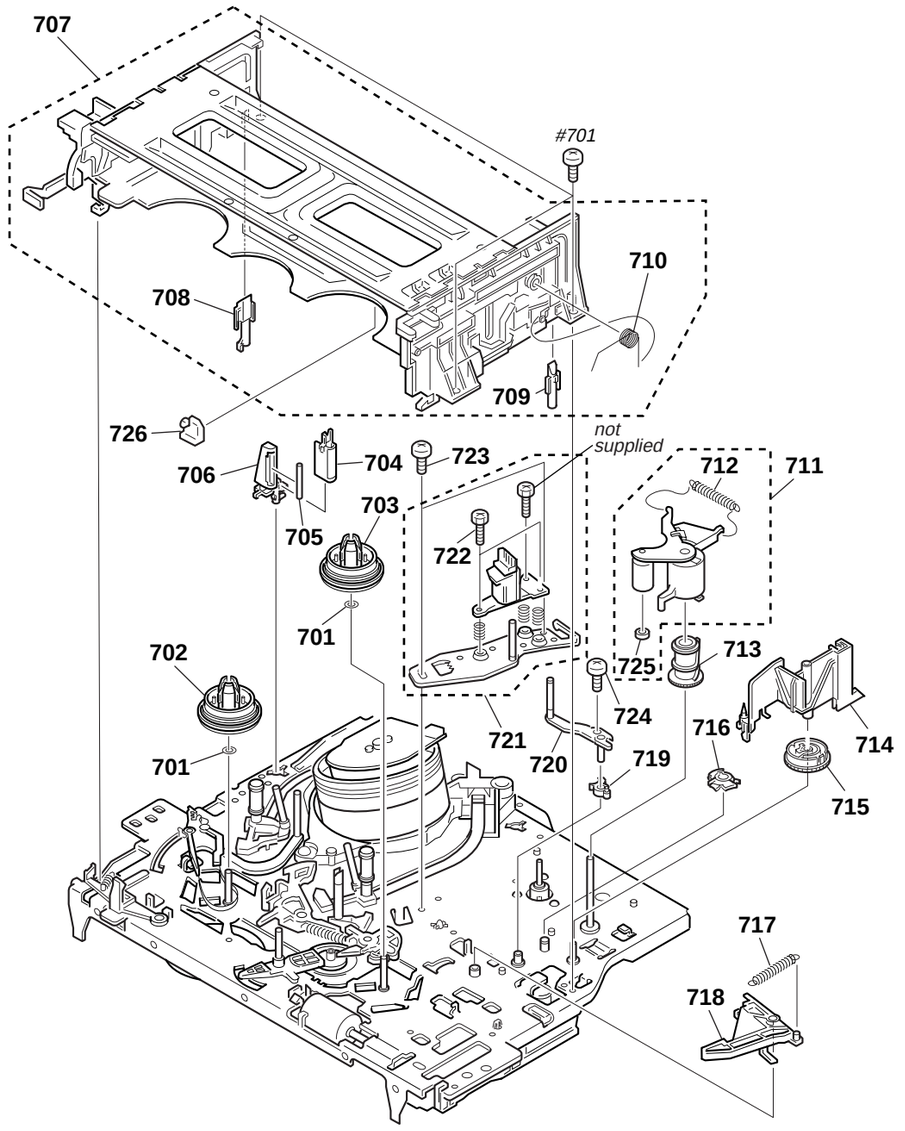
Ref. No.	Part No.	Description	Remarks
⚠52	1-468-271-31	POWER BLOCK (ETXNY165E1D)	
* 53	A-6791-746-A	MA-338C BOARD, COMPLETE (45:VC)	
* 53	A-6791-747-A	MA-338A BOARD, COMPLETE (45:UX)	
* 53	A-6791-748-A	MA-338B BOARD, COMPLETE (45:CP)	
* 53	A-6791-749-A	MA-338D BOARD, COMPLETE (40:B)	
* 53	A-6791-750-A	MA-338F BOARD, COMPLETE (40:VC1)	
* 53	A-6791-751-A	MA-338FN BOARD, COMPLETE (40:VC2)	
* 53	A-6791-752-A	MA-338E BOARD, COMPLETE (40:CP)	
* 53	A-6791-753-A	MA-338I BOARD, COMPLETE (30:VC1)	
* 53	A-6791-754-A	MA-338IN BOARD, COMPLETE (30:VC2)	
* 53	A-6791-755-A	MA-338G BOARD, COMPLETE (30:UX)	
* 53	A-6791-756-A	MA-338H BOARD, COMPLETE (30:CP)	
* 53	A-6791-757-A	MA-338O BOARD, COMPLETE (20:VP1)	
* 53	A-6791-758-A	MA-338ON BOARD, COMPLETE (20:VP2)	
* 53	A-6791-759-A	MA-338K BOARD, COMPLETE (20:UX)	
* 53	A-6791-760-A	MA-338J BOARD, COMPLETE (20:EX)	
* 53	A-6791-761-A	MA-338N BOARD, COMPLETE (25:VC)	
* 53	A-6791-762-A	MA-338L BOARD, COMPLETE (25:B)	
* 53	A-6791-763-A	MA-338M BOARD, COMPLETE (25:CP)	
* 53	A-6791-764-A	MA-338NN BOARD, COMPLETE (25:X)	

Ref. No.	Part No.	Description	Remarks
* 53	A-6791-764-A	MA-338NN BOARD, COMPLETE (X25)	
* 53	A-6791-765-A	MA-338P BOARD, COMPLETE (10:AE1)	
* 53	A-6791-766-A	MA-338PN BOARD, COMPLETE (10:AE2)	
* 53	A-6791-767-A	MA-338Q BOARD, COMPLETE (40:EE)	
* 53	A-6791-769-A	MA-338U BOARD, COMPLETE (10:EE)	
* 53	A-6791-768-A	MA-338T BOARD, COMPLETE (30:EE)	
* 53	A-6791-770-A	MA-338V BOARD, COMPLETE (10:EG,X10)	
* 53	A-6791-771-A	MA-338S BOARD, COMPLETE (40:EG)	
* 53	A-6791-772-A	MA-338R BOARD, COMPLETE (X40)	
54	3-970-608-21	SUMITITE (B3), +BV	
55	3-979-382-81	PANEL , REAR (E) (30:CP,VC1,VC2/45:CP,VC)	
55	3-979-382-91	PANEL , REAR (E) (30:EE)	
55	3-053-409-01	PANEL (E), REAR (25/X25/40:B,CP,VC1,VC2)	
55	3-053-409-11	PANEL (E), REAR (30:UX/45:UX)	
55	3-053-409-21	PANEL (E), REAR (10:AE1,AE2)	
55	3-053-409-31	PANEL (E), REAR (10:EG/X10/20/40:EG/X40)	
55	3-053-409-41	PANEL (E), REAR (10:EE/40:EE)	
56	3-053-431-01	BRACKET	
* 57	3-670-570-21	SPACER, SUPPORT	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

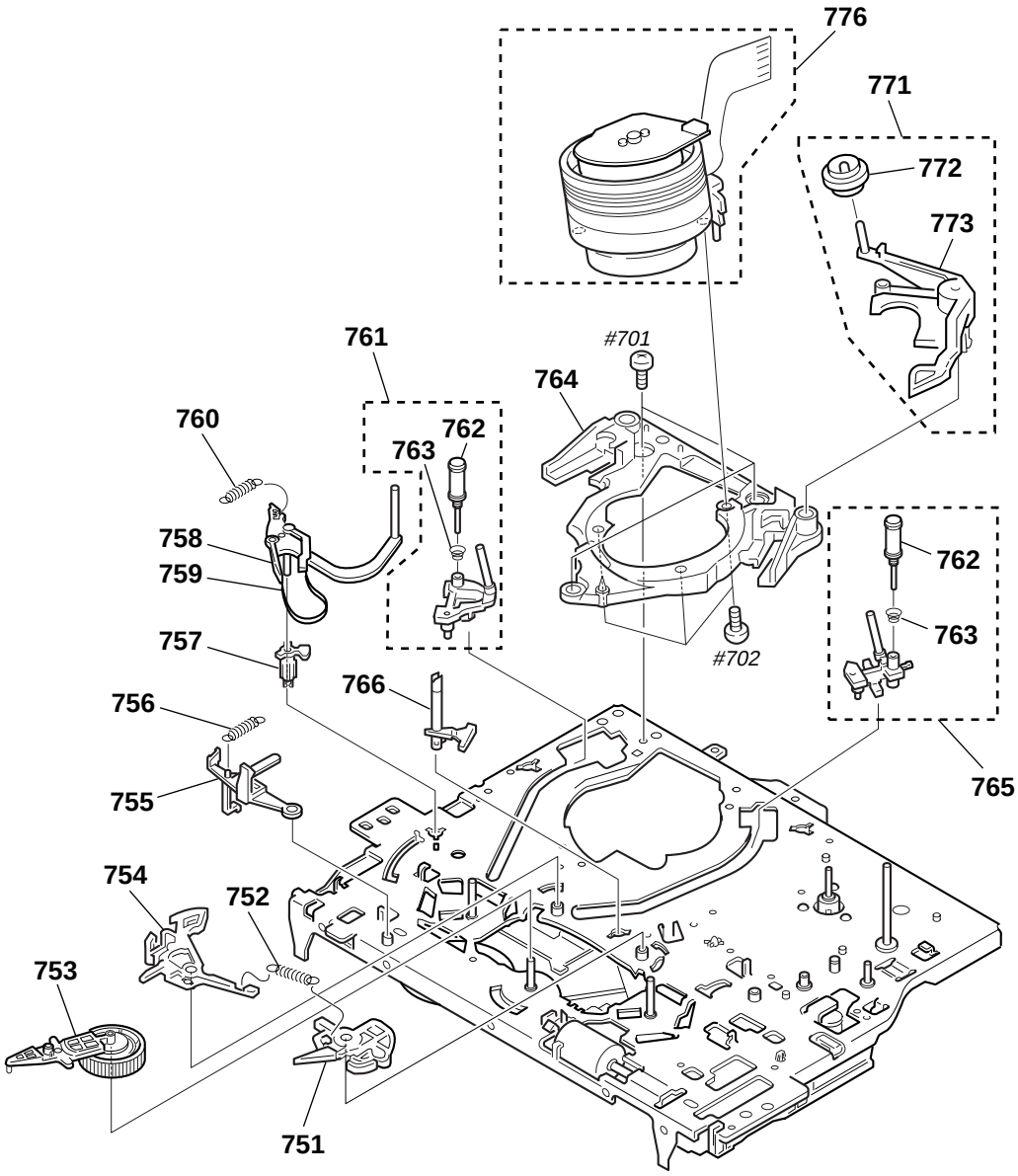
7-1-3. MECHANISM DECK SECTION-1



Ref. No.	Part No.	Description	Remarks
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL COMPLETE ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	

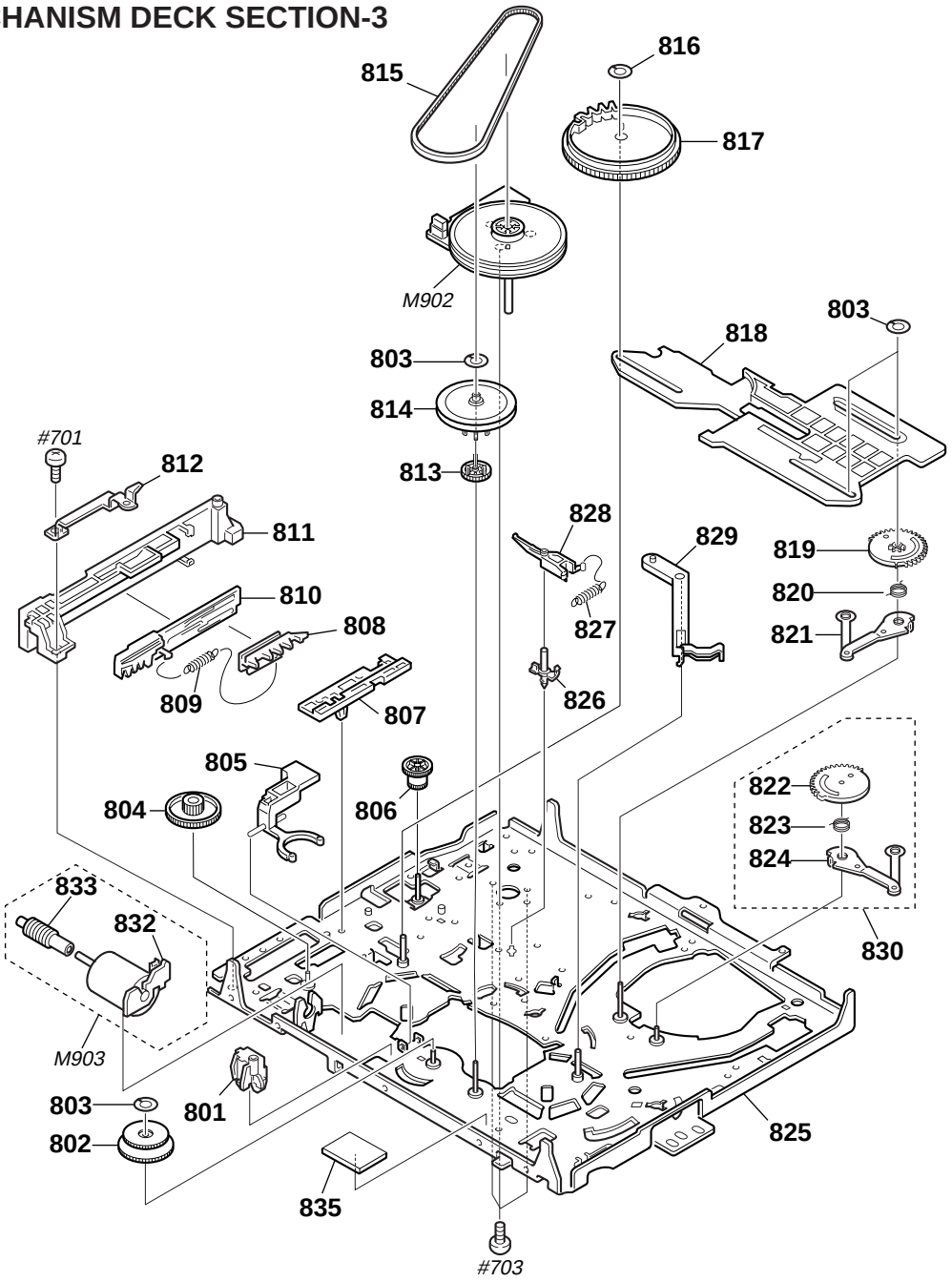
Ref. No.	Part No.	Description	Remarks
714	3-977-514-01	OPENER, LID	
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-01	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING,EXTENSION (RVS BRAKE)	
718	X-3947-582-1	ARMASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8ASSY	
721	A-6775-052-A	ACEBLOCK ASSY (ALPS) (EURO 2)	
722	3-974-556-11	+HEXA TT 2.6 × 9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3 × 8	
724	3-719-381-01	SCREW (M2 × 4)	
725	3-736-045-01	BEARING (NO FLANG), BALL	
726	3-055-098-01	GUIDE,TAPE	

7-1-4. MECHANISM DECK SECTION-2



Ref. No.	Part No.	Description	Remarks
751	X-3947-581-4	BRAKE ASSY, MAIN(T)	
752	3-977-462-01	SPRING,EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARMASSY, PENDULUM	
754	X-3947-580-5	BRAKE ASSY, MAIN(S)	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3944-378-1	ROLLER ASSY, GUIDE	
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
771	A-6746-074-G	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-975-724-07	ARM, HC	
776	1-759-791-11	DRUM ASSY, DZH-78D-R (10/X10/20:VP1,VP2/25:B/30:EE)	
776	1-759-793-11	DRUM ASSY, DZH-92B-R (20:EX,UX/25:CP,VC/X25/30:CP,UX,VC1,VC2,X25)	
776	1-759-795-11	DRUM ASSY, DZH-93B-R (40/X40/45)	

7-1-5. MECHANISM DECK SECTION-3



Ref. No.	Part No.	Description	Remarks
801	3-977-437-01	RETAINER,CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	
817	3-977-439-01	GEAR, CAM	
818	3-977-442-01	SLIDER	

Ref. No.	Part No.	Description	Remarks
819	3-977-455-01	GEAR, LOADING(T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING(T)	
822	3-977-451-01	GEAR, LOADING(S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING(S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING(S)	
832	1-766-723-21	CONNECTOR, BOARD TO BOAR 3P	
833	3-977-436-01	WORM	
835	3-989-917-01	SPACER (REC PROOF)	
M902	1-698-971-11	MOTOR, DC	
M903	X-3947-577-1	MOTOR ASSY, CAM	

7-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- Abbreviation
  X10 : SX10
  X25 : SX25
  X40 : SX40

When indicating parts by reference number, please include the board name.

- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
*	A-6794-659-A	DS-83C BOARD, COMPLETE (45)			
		**********			
*	A-6794-661-A	DS-83A BOARD, COMPLETE			
		**********			
					(EXCEPT 30,45:EE)
*	A-6794-663-A	DS-83B BOARD, COMPLETE (30: EE)			
		**********			
					(Ref. NO:1,000 series)
		< CONNECTOR >			
* CN450	1-750-737-11	CONNECTOR, FFC/FPC 5P (30,45:EE)			
		< DIODE >			
D450	8-719-056-06	DIODE SLR-342DC3F (JOG) (45)			
D451	8-719-988-61	DIODE 1SS355TE-17 (45)			
		< RESISTOR >			
R450	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R451	1-216-049-91	RES,CHIP	1K	5%	1/10W
		< SWITCH >			
S450	1-762-196-21	SWITCH, TACT(FF) (30,45:EE)			
S451	1-762-196-21	SWITCH, TACT(FF) (EXCEPT 30,45: EE)			
S452	1-762-196-21	SWITCH, TACT(PLAY) (EXCEPT 30,45: EE)			
S453	1-762-196-21	SWITCH, TACT(STOP) (EXCEPT 30,45: EE)			
S454	1-762-196-21	SWITCH, TACT(REW) (EXCEPT 30,45: EE)			
S455	1-762-196-21	SWITCH, TACT (REW) (30,45:EE)			
S456	1-762-196-21	SWITCH, TACT (JOG) (45)			
*	A-6794-658-A	FI-15B BOARD, COMPLETE(30: EXCEPT EE/45)			
		**********			
*	A-6794-662-A	FI-15A BOARD, COMPLETE (30: EE)			
		**********			
					(Ref. NO:1,000 series)
		< CAPACITOR >			
C481	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (30,45)
C493	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (30,45)
		< CONNECTOR >			
CN480	1-573-130-21	PIN, CONNECTOR 7P (30: EE)			
CN480	1-506-469-11	PIN, CONNECTOR 4P (30: EXCEPT EE/45)			

Ref. No.	Part No.	Description			Remarks
		< DIODE >			
D481	8-719-067-40	DIODE STZ6.8N-T146 (30,45)			
D485	8-719-045-63	DIODE SLR342YC-A-47(30:EE)			
D491	8-719-067-40	DIODE STZ6.8N-T146(30,45)			
D493	8-719-070-59	DIODE PDZ6.8B-115(30,45)			
		< JACK >			
J481	1-774-510-11	JACK, PIN 2P (LINE-2 IN) (30,45)			
		< TRANSISTOR >			
Q485	8-729-043-29	TRANSISTOR	PDTC144EK-115 (30:EE)		
		< RESISTOR >			
R480	1-216-022-00	METAL CHIP	75	5%	1/10W (30, 45)
R485	1-216-041-00	METAL CHIP	470	5%	1/10W (30: EE)
R491	1-216-041-00	METAL CHIP	470	5%	1/10W (30, 45)
		< SWITCH >			
S485	1-762-196-21	SWITCH, TACT(SURROUND)(30:EE)			
*	A-6791-746-A	MA-338C BOARD, COMPLETE (45: VC)			
		**********			
*	A-6791-747-A	MA-338A BOARD, COMPLETE (45: UX)			
		**********			
*	A-6791-748-A	MA-338B BOARD, COMPLETE (45: CP)			
		**********			
*	A-6791-749-A	MA-338D BOARD, COMPLETE (40: B)			
		**********			
*	A-6791-750-A	MA-338F BOARD, COMPLETE (40: VC1)			
		**********			
*	A-6791-751-A	MA-338FN BOARD, COMPLETE (40: VC2)			
		**********			
*	A-6791-752-A	MA-338E BOARD, COMPLETE(40: CP)			
		**********			
*	A-6791-753-A	MA-338I BOARD, COMPLETE(30: VC1)			
		**********			
*	A-6791-754-A	MA-338IN BOARD, COMPLETE (30: VC2)			
		**********			

MA-338

Ref. No.	Part No.	Description	Remarks
*	A-6791-755-A	MA-338G BOARD, COMPLETE (30: UX)	
		**********	
*	A-6791-756-A	MA-338H BOARD, COMPLETE (30: CP)	
		**********	
*	A-6791-757-A	MA-338O BOARD, COMPLETE (20: VP1)	
		**********	
*	A-6791-758-A	MA-338ON BOARD, COMPLETE (20: VP2)	
		**********	
*	A-6791-759-A	MA-338K BOARD, COMPLETE (20: UX)	
		**********	
*	A-6791-760-A	MA-338J BOARD, COMPLETE (20: EX)	
		**********	
*	A-6791-761-A	MA-338N BOARD, COMPLETE (25: VC)	
		**********	
*	A-6791-762-A	MA-338L BOARD, COMPLETE (25: B)	
		**********	
*	A-6791-763-A	MA-338M BOARD, COMPLETE (25: CP)	
		**********	
*	A-6791-764-A	MA-338NN BOARD, COMPLETE (X25)	
		**********	
*	A-6791-765-A	MA-338P BOARD, COMPLETE (10: AE1)	
		**********	
*	A-6791-766-A	MA-338PN BOARD, COMPLETE (10: AE2)	
		**********	
*	A-6791-767-A	MA-338Q BOARD, COMPLETE (40: EE)	
		**********	
*	A-6791-769-A	MA-338U BOARD, COMPLETE (10: EE)	
		**********	
*	A-6791-768-A	MA-338T BOARD, COMPLETE (30: EE)	
		**********	
*	A-6791-770-A	MA-338V BOARD, COMPLETE (10: EG, X10)	
		**********	
*	A-6791-771-A	MA-338S BOARD, COMPLETE (40: EG)	
		**********	
*	A-6791-772-A	MA-338R BOARD, COMPLETE (X40)	
		**********	
		(Ref. NO:1,000 series)	
	3-053-427-01	HOLDER, INDICATION TUBE	
	3-053-428-01	BASE,INDICATION TUBE	
*	3-960-273-01	SPACER, TOP END	
*	3-960-274-01	SPACER, LED	
		< CAPACITOR >	

C100	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C103	1-128-057-11	ELECT	330uF	20%	6.3V
C105	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V

C107	1-124-589-11	ELECT	47uF	20%	16V
C113	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C114	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C115	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C120	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C121	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C122	1-124-589-11	ELECT	47uF	20%	16V
C123	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C131	1-124-589-11	ELECT	47uF	20%	16V
C133	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C134	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C140	1-124-584-00	ELECT	100uF	20%	10V
C141	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C142	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C143	1-128-131-11	ELECT	22uF	20%	50V
C144	1-128-131-11	ELECT	22uF	20%	50V
C145	1-124-584-00	ELECT	100uF	20%	10V
C146	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C160	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C161	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C162	1-104-905-11	CAPACITOR	0.22F	5.5V	
C163	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C164	1-124-584-00	ELECT	100uF	20%	10V
C165	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C166	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C167	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C168	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C169	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C170	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C171	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C172	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C173	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C200	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C201	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C202	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C203	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C204	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C205	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C206	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C207	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C208	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C209	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C210	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C211	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C212	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C213	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C214	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C216	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C217	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C218	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C219	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C220	1-124-589-11	ELECT	47uF	20%	16V
C221	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		(10/20:VP1,VP2/25:B/30:EE/40/45/X10/X40)			
C221	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
		(20:EX,UX/25:CP,VC/30:EXCEPT EE/X25)			

Ref. No.	Part No.	Description			Remarks
C222	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C223	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C224	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C225	1-124-589-11	ELECT	47uF	20%	16V
C226	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C227	1-124-589-11	ELECT	47uF	20%	16V
C228	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C229	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C230	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C231	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C232	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C233	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C234	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C235	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C236	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
					(10,30,40: EXCEPT EE)
C237	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C238	1-126-157-11	ELECT	10uF	20%	16V
C239	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
					(30:EXCEPT EE/45)
C240	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C241	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(30,45)
C242	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C243	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C244	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C245	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C246	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C247	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C248	1-124-589-11	ELECT	47uF	20%	16V
C249	1-126-157-11	ELECT	10uF	20%	16V
C250	1-124-589-11	ELECT	47uF	20%	16V
C251	1-126-153-11	ELECT	22uF	20%	6.3V
C252	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C253	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
					(40:B)
C253	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
					(25:B)
C255	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C271	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
					(40,45,X40)
C272	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(40,45,X40)
C275	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C276	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C278	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C279	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C280	1-124-584-00	ELECT	100uF	20%	10V
C281	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C282	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C283	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C284	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C285	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C288	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C306	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C307	1-126-157-11	ELECT	10uF	20%	16V
C308	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V

Ref. No.	Part No.	Description			Remarks
C309	1-137-370-11	FILM	0.01uF	5%	50V
C310	1-126-163-11	ELECT	4.7uF	20%	50V
C312	1-126-966-11	ELECT	33uF	20%	16V
C313	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C314	1-126-157-11	ELECT	10uF	20%	16V
C315	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C316	1-126-163-11	ELECT	4.7uF	20%	50V
C317	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C318	1-126-160-11	ELECT	1uF	20%	50V
C319	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
					(30,45)
C320	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C321	1-124-589-11	ELECT	47uF	20%	16V
C322	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C323	1-137-397-11	FILM	0.047uF	5%	100V
C324	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C325	1-124-589-11	ELECT	47uF	20%	16V
C326	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C327	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C420	1-124-589-11	ELECT	47uF	20%	16V
C421	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C422	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C423	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C424	1-126-157-11	ELECT	10uF	20%	16V
C460	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C500	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C510	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C511	1-124-589-11	ELECT	47uF	20%	16V
C512	1-124-589-11	ELECT	47uF	20%	16V
C513	1-126-935-11	ELECT	470uF	20%	6.3V
C571	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C572	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C580	1-126-964-11	ELECT	10uF	20%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C581	1-126-964-11	ELECT	10uF	20%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C582	1-124-261-00	ELECT	10uF	20%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C583	1-126-964-11	ELECT	10uF	20%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C584	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C585	1-126-964-11	ELECT	10uF	20%	50V
					(25/45/40:B,CP,VC1,VC2/30/X25)
C586	1-126-964-11	ELECT	10uF	20%	50V
					(10/20/30:EE/EXCEPT 40:EE,EG/X40)
C587	1-126-964-11	ELECT	10uF	20%	50V
					(B,CP,VC,VC1,VC2)
C588	1-126-964-11	ELECT	10uF	20%	50V
					(25/30/40:B,CP,VC1,VC2/45/X25)
C600	1-128-131-11	ELECT	22uF	20%	50V
C601	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C603	1-128-131-11	ELECT	22uF	20%	50V
C604	1-124-589-11	ELECT	47uF	20%	16V
C605	1-128-131-11	ELECT	22uF	20%	50V
C607	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C608	1-128-131-11	ELECT	22uF	20%	50V
C609	1-124-589-11	ELECT	47uF	20%	16V
C610	1-128-131-11	ELECT	22uF	20%	50V

MA-338

Ref. No.	Part No.	Description			Remarks
C611	1-128-131-11	ELECT	22uF	20%	50V (B,CP,VC,VC1,VC2)
C612	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (B,CP,VC,VC1,VC2)
C613	1-124-589-11	ELECT	47uF	20%	16V (B,CP,VC,VC1,VC2)
C615	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C660	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C661	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C662	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C663	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C664	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C665	1-163-245-11	CERAMIC CHIP	56PF	5%	50V (B,EE,EG)
C666	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C667	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C668	1-124-584-00	ELECT	100uF	20%	10V
C669	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C670	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C671	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C672	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C701	1-124-261-00	ELECT	10uF	20%	50V
C704	1-126-964-11	ELECT	10uF	20%	50V
C705	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C708	1-104-664-11	ELECT	47uF	20%	16V
C709	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C710	1-128-131-11	ELECT	22uF	20%	50V (10:EE,EG/30:EE/EXCEPT 40:EE,EG)
C750	1-126-933-11	ELECT	100uF	20%	16V (10:EE/30:EE/40:EE)
C751	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (10:EE/30:EE/40:EE)
C752	1-126-933-11	ELECT	100uF	20%	16V
C753	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C754	1-126-935-11	ELECT	470uF	20%	6.3V
C801	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (10/30:EE/EXCEPT 40:EE/X10/X40)
C850	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT CP,EE,10,X10,X40)
C851	1-124-261-00	ELECT	10uF	20%	50V (EXCEPT CP,EE,10,X10,X40)
C852	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V (EXCEPT CP,EE,10,X10,X40)
C853	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V (EXCEPT CP,EE,10,X10,X40)
C855	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (EXCEPT CP,EE,10,X10,X40)
C856	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT CP,EE,10,X10,X40)
C870	1-124-589-11	ELECT	47uF	20%	16V (30:EE)
C871	1-124-261-00	ELECT	10uF	20%	50V (30:EE)
C872	1-124-261-00	ELECT	10uF	20%	50V (30:EE)
C873	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (30:EE)
C874	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (30:EE)

Ref. No.	Part No.	Description			Remarks
C970	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (25:B/40:B)
C971	1-124-257-00	ELECT	2.2uF	20%	50V (25:B/40:B)
C972	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (25:B/40:B)
C973	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C974	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (25:B/40:B)
C975	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (25:B/40:B)
C976	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (25:B/40:B)
C977	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C978	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (25:B/40:B)
C979	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (25:B/40:B)
C980	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (25:B/40:B)
C981	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C982	1-163-007-11	CERAMIC CHIP	680PF	10%	50V (25:B/40:B)
C983	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (25:B/40:B)
C984	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C985	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (25:B/40:B)
C986	1-126-964-11	ELECT	10uF	20%	50V (25:B/40:B)
C987	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (25:B/40:B)
C988	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (25:B/40:B)
C991	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (25:B/40:B)
C992	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C993	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C994	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (25:B/40:B)
C995	1-126-157-11	ELECT	10uF	20%	16V (25:B/40:B)
C996	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V (25:B/40:B)

< CONNECTOR >

*	CN101	1-573-128-11	PIN, CONNECTOR 5P
	CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P
*	CN104	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P
	CN140	1-506-468-11	PIN, CONNECTOR 3P
	CN160	1-506-473-11	PIN, CONNECTOR 8P (30,45:EE)
	CN160	1-506-469-11	PIN, CONNECTOR 4P (EXCEPT 30:EE,45)
	CN161	1-506-469-11	PIN, CONNECTOR 4P
	CN260	1-785-550-11	CONNECTOR, FFC/FPC 8P
*	CN262	1-560-893-00	PIN, CONNECTOR 5P
	CN300	1-506-468-11	PIN, CONNECTOR 3P

Ref. No.	Part No.	Description	Remarks
CN301	1-506-469-11	PIN, CONNECTOR 4P	
* CN500	1-695-935-11	CONNECTOR (SQUARE TYPE) 21P	(10,30,40:EXCEPT EE)
CN501	1-506-469-11	PIN, CONNECTOR 4P (30:EXCEPT EE/45)	
CN501	1-573-130-21	PIN, CONNECTOR 7P (30:EE)	
* CN570	1-695-935-11	CONNECTOR (SQUARE TYPE) 21P	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
CN600	1-569-667-11	CONNECTOR, BOARD TO BOARD 8P	
		< JACK >	
CNJ500	1-779-010-11	JACK, PIN 4P (LINE-1(TV)) (10:EE/40:EE)	
CNJ501	1-779-012-21	JACK, PIN 5P (DECODER/LINE-3 IN) (30:EE)	
		< DIODE >	
D100	8-719-048-26	DIODE GL528V1	
D110	8-719-200-82	DIODE 11ES2	
D146	8-719-067-40	DIODE STZ6.8N-T146 (10,30,40:EXCEPT EE)	
D160	8-719-200-82	DIODE 11ES2	
D161	8-719-200-82	DIODE 11ES2	
D162	8-719-070-59	DIODE PDZ6.8B-115	
D163	8-719-070-59	DIODE PDZ6.8B-115	
D461	8-719-056-07	DIODE SLR-342MC3F (ON/STANDBY)	
D500	8-719-067-40	DIODE STZ6.8N-T146	
D502	8-719-067-40	DIODE STZ6.8N-T146 (30:EE)	
D504	8-719-067-40	DIODE STZ6.8N-T146	
D508	8-719-070-59	DIODE PDZ6.8B-115 (10,30,40:EXCEPT EE)	
D509	8-719-070-59	DIODE PDZ6.8B-115 (10:EE/30:EE/40:EE)	
D510	8-719-070-59	DIODE PDZ6.8B-115 (10,30,40:EXCEPT EE)	
D511	8-719-070-59	DIODE PDZ6.8B-115 (10,30,40:EXCEPT EE)	
D512	8-719-977-40	DIODE UDZ-TE-17-13B (10,30,40:EXCEPT EE)	
D513	8-719-067-40	DIODE STZ6.8N-T146 (10,30,40:EXCEPT EE)	
D515	8-719-067-40	DIODE STZ6.8N-T146 (10,30,40:EXCEPT EE)	
D540	8-719-067-40	DIODE STZ6.8N-T146	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
D542	8-719-067-40	DIODE STZ6.8N-T146 (B,CP,VC,VC1,VC2)	
D544	8-719-977-40	DIODE UDZ-TE-17-13B	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
D570	8-719-070-59	DIODE PDZ6.8B-115	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
D571	8-719-067-40	DIODE STZ6.8N-T146	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
D575	8-719-067-40	DIODE STZ6.8N-T146 (B,CP,VC,VC1,VC2)	
D590	8-719-988-61	DIODE 1SS355TE-17	
D591	8-719-988-61	DIODE 1SS355TE-17	
D600	8-719-988-61	DIODE 1SS355TE-17	
D601	8-719-988-61	DIODE 1SS355TE-17	
D602	8-719-070-56	DIODE PDZ5.1B-115	
D603	8-719-200-82	DIODE 11ES2 (B,CP,VC,VC1,VC2)	
D702	8-719-982-26	DIODE MTZJ-33B	
D750	8-719-200-82	DIODE 11ES2 (10,30,40:EXCEPT EE)	
D751	8-719-070-56	DIODE PDZ5.1B-115 (10:EE/30:EE/40:EE)	
D752	8-719-988-61	DIODE 1SS355TE-17 (10:EE/30:EE/40:EE)	
D800	8-719-988-61	DIODE 1SS355TE-17	(10/30:EE/EXCEPT 40:EE/X10/X40)

Ref. No.	Part No.	Description	Remarks
		< TERMINAL >	
ET600	1-537-770-21	TERMINAL BOARD, GROUND	
		< FILTER >	
FL500	1-236-163-11	ENCAPSULATED COMPONENT	
FL501	1-236-163-11	ENCAPSULATED COMPONENT (30:EE)	
FL502	1-236-163-11	ENCAPSULATED COMPONENT	
FL570	1-236-163-11	ENCAPSULATED COMPONENT	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
FL572	1-236-163-11	ENCAPSULATED COMPONENT	(B,CP,VC,VC1,VC2)
		< IC >	
IC130	8-759-481-46	IC LB1943	
IC160	8-759-248-87	IC MM1256XF-BE	
IC161	8-759-454-78	IC 24LC08BT/SN	
IC161	8-759-575-72	IC M24C08-WMN6T	
IC162	8-759-590-64	IC M37760MCA131GP	(20:EX,UX,VP1/25/30:UX,CP,VC1/40:B,CP,VC1/45)
IC162	8-759-590-66	IC M37760MCA133GP	(20:VP2/30:VC2/40:VC2/X25)
IC162	8-759-590-62	IC M37760M8A129GP (10:EE/30:EE/40:EE)	
IC162	8-759-590-68	IC M37760MCA135GP (40:EG)	
IC162	8-759-590-65	IC M37760MCA132GP (10:AE2)	
IC162	8-759-590-63	IC M37760MCA130GP (10:AE1)	
IC162	8-759-590-67	IC M37760MCA134GP (10:EG,X40,X10)	
IC200	8-759-547-32	IC LA71560M-MPB	
IC260	8-759-564-36	IC LA70011 (40,45,X40)	
IC260	8-759-549-79	IC LA70001 (10,20,30,25,X10,X25)	
IC320	8-759-499-30	IC BA7755AF-E2	
IC420	8-759-547-59	IC M35500BGP	
IC460	8-742-042-00	HYB IC SBX1986-51	
IC580	8-759-300-71	IC HD14053BFP	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
IC580	8-759-009-07	IC MC14053BFEL	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
IC600	8-759-438-18	IC PQ12RD08	
IC601	8-759-438-18	IC PQ12RD08 (B,CP,VC,VC1,VC2)	
IC850	8-759-484-61	IC SDA5650X-GEG	(EXCEPT CP,EE,10,X40,X10)
IC870	8-759-988-36	IC BA14741F (30:EE)	
IC970	8-759-438-17	IC LA7337 (25:B/40:B)	
		< JUMPER RESISTOR >	
JR001	1-216-295-91	SHORT 0	
JR002	1-216-296-91	SHORT 0	
JR003	1-216-296-91	SHORT 0	
JR004	1-216-296-91	SHORT 0	
JR005	1-216-296-91	SHORT 0	
JR006	1-216-296-91	SHORT 0	
JR007	1-216-296-91	SHORT 0 (B,CP,VC,VC1,VC2)	
JR008	1-216-296-91	SHORT 0	
JR009	1-216-296-91	SHORT 0 (10,30,40:EXCEPT EE)	
JR010	1-216-296-91	SHORT 0	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
JR011	1-216-296-91	SHORT 0	
JR012	1-216-296-91	SHORT 0	
JR013	1-216-295-91	SHORT 0	
JR014	1-216-296-91	SHORT 0	
JR015	1-216-296-91	SHORT 0	

Ref. No.	Part No.	Description	Remarks
JR016	1-216-295-91	SHORT	0
JR017	1-216-296-91	SHORT	0
JR018	1-216-296-91	SHORT	0
JR019	1-216-296-91	SHORT	0
JR020	1-216-296-91	SHORT	0
JR021	1-216-295-91	SHORT	0 (30:EE)
JR022	1-216-296-91	SHORT	0 (10,30,40:EXCEPT EE)
JR023	1-216-296-91	SHORT	0
JR024	1-216-296-91	SHORT	0 (25:B/40:B)
JR025	1-216-296-91	SHORT	0
JR026	1-216-295-91	SHORT	0 (10,30,40:EXCEPT EE)
JR027	1-216-296-91	SHORT	0
JR028	1-216-295-91	SHORT	0 (10/20/30:EE/EXCEPT 40:EE,EG/X40)
JR029	1-216-295-91	SHORT	0 (10,30,40:EXCEPT EE)
JR030	1-216-296-91	SHORT	0 (25:B/40:B)
JR032	1-216-295-91	SHORT	0
JR033	1-216-296-91	SHORT	0
JR034	1-216-295-91	SHORT	0
JR035	1-216-296-91	SHORT	0 (30:EE)
JR036	1-216-296-91	SHORT	0 (30:EE)
JR037	1-216-295-91	SHORT	0 (25:B/40:B)
JR038	1-216-295-91	SHORT	0
JR040	1-216-295-91	SHORT	0
JR041	1-216-295-91	SHORT	0
JR042	1-216-296-91	SHORT	0
JR043	1-216-296-91	SHORT	0
JR044	1-216-296-91	SHORT	0
JR045	1-216-295-91	SHORT	0
JR046	1-216-296-91	SHORT	0 (10/20/30:EE/EXCEPT40:EE,EG/X40)
JR047	1-216-296-91	SHORT	0
JR048	1-216-296-91	SHORT	0
JR049	1-216-296-91	SHORT	0
JR050	1-216-296-91	SHORT	0
JR051	1-216-296-91	SHORT	0
JR052	1-216-296-91	SHORT	0
JR053	1-216-296-91	SHORT	0
JR054	1-216-295-91	SHORT	0
JR055	1-216-296-91	SHORT	0 (10/20/30:EE/EXCEPT40:EE,EG/X40)
JR056	1-216-296-91	SHORT	0
JR057	1-216-296-91	SHORT	0
JR058	1-216-296-91	SHORT	0
JR059	1-216-296-91	SHORT	0
JR060	1-216-296-91	SHORT	0
JR061	1-216-296-91	SHORT	0
JR062	1-216-296-91	SHORT	0 (30,45:EE)
JR063	1-216-296-91	SHORT	0 (30,45:EE)
JR064	1-216-296-91	SHORT	0
JR065	1-216-296-91	SHORT	0 (10,30,40:EXCEPT EE)
JR066	1-216-296-91	SHORT	0 (10/20/30:EE/EXCEPT 40:EE,EG/X40)
JR067	1-216-295-91	SHORT	0 (30:EE)
JR068	1-216-295-91	SHORT	0 (10/20/30:EE/EXCEPT 40:EE,EG/X40)
JR070	1-216-296-91	SHORT	0
JR071	1-216-296-91	SHORT	0
JR072	1-216-296-91	SHORT	0
JR073	1-216-296-91	SHORT	0
JR074	1-216-295-91	SHORT	0
JR075	1-216-296-91	SHORT	0
JR076	1-216-296-91	SHORT	0
JR077	1-216-296-91	SHORT	0
JR079	1-216-296-91	SHORT	0
JR080	1-216-295-91	SHORT	0
JR081	1-216-295-91	SHORT	0
JR082	1-216-295-91	SHORT	0 (10/20/30:EE/EXCEPT40:EE,EG/X40)
JR083	1-216-296-91	SHORT	0
JR084	1-216-295-91	SHORT	0
JR085	1-216-295-91	SHORT	0
JR086	1-216-295-91	SHORT	0 (25:B/40:B)
JR087	1-216-295-91	SHORT	0
JR088	1-216-296-91	SHORT	0
JR089	1-216-296-91	SHORT	0
JR090	1-216-296-91	SHORT	0
JR091	1-216-296-91	SHORT	0
JR092	1-216-296-91	SHORT	0
JR093	1-216-296-91	SHORT	0
JR094	1-216-295-91	SHORT	0
JR095	1-216-295-91	SHORT	0
JR096	1-216-296-91	SHORT	0
JR097	1-216-295-91	SHORT	0
		< JUMPER RESISTOR >	
JS140	1-216-295-91	SHORT	0
JS580	1-216-295-91	SHORT	0 (10/20/30:EE/40:EE,EG/X10/X40)
JS582	1-216-295-91	SHORT	0
JS601	1-216-295-91	SHORT	0
		< COIL >	
L140	1-414-936-21	INDUCTOR	22uH
L160	1-414-936-21	INDUCTOR	22uH
L161	1-414-936-21	INDUCTOR	22uH
L200	1-414-946-21	INDUCTOR	39uH
L201	1-414-940-21	INDUCTOR	100uH
L202	1-414-934-21	INDUCTOR	10uH
L203	1-414-934-21	INDUCTOR	10uH
L204	1-414-934-21	INDUCTOR	10uH
L205	1-414-934-21	INDUCTOR	10uH
L206	1-414-938-21	INDUCTOR	47uH (25:B/40:B)
L270	1-414-940-21	INDUCTOR	100uH
L300	1-414-940-21	INDUCTOR	100uH
L460	1-414-938-21	INDUCTOR	47uH
L510	1-414-940-21	INDUCTOR	100uH
L580	1-414-940-21	INDUCTOR	100uH (25/30/40:B,CP,VC2,VC1/45/X25)
L600	1-414-939-21	INDUCTOR	68uH
L601	1-414-934-21	INDUCTOR	10uH
L660	1-414-930-21	INDUCTOR	2.2uH
L661	1-414-936-21	INDUCTOR	22uH (B,EE,EG)
L662	1-414-936-21	INDUCTOR	22uH
L663	1-414-936-21	INDUCTOR	22uH
L701	1-414-930-21	INDUCTOR	2.2uH
L750	1-414-930-21	INDUCTOR	2.2uH
L970	1-414-933-21	INDUCTOR	6.8uH (25:B/40:B)
L971	1-414-945-21	INDUCTOR	27uH (25:B/40:B)

Ref. No.	Part No.	Description	Remarks
L972	1-414-938-21	INDUCTOR 47uH(25:B/40:B)	
L973	1-414-938-21	INDUCTOR 47uH(25:B/40:B)	
L975	1-414-934-21	INDUCTOR 10uH(25:B/40:B)	
		< FLUORESCENT INDICATOR >	
ND420	1-517-832-11	INDICATOR TUBE, FLUORESCENT	(10/30:EE/EXCEPT 40:EE,EG/X10/X40)
ND420	1-517-833-11	INDICATOR TUBE, FLUORESCENT	(10/30:EE/40:EE,EG/X10/X40)
		< PHOTO INTERRUPTER >	
PH100	8-749-013-23	PHOTO INTERRUPTER GP3S120	
PH101	8-749-013-23	PHOTO INTERRUPTER GP3S120	
		< IC LINK >	
⚠PS120	1-533-586-31	LINK, IC	
⚠PS600	1-533-593-11	LINK, IC	
⚠PS601	1-533-589-21	LINK, IC	
⚠PS602	1-533-586-31	LINK, IC 315mA 491.315 (B,CP,VC,VC1,VC2)	
		< TRANSISTOR >	
Q100	8-729-043-84	TRANSISTOR PT380F3	
Q100	8-729-047-02	TRANSISTOR RPT-37PBT32L	
Q101	8-729-043-84	TRANSISTOR PT380F3	
Q101	8-729-047-02	TRANSISTOR RPT-37PBT32L	
Q102	8-729-281-53	TRANSISTOR 2SC1815-GR	
Q200	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q201	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q202	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q203	8-729-216-22	TRANSISTOR 2SA1162-G	
Q204	8-729-043-29	TRANSISTOR PDTC144EK-115 (25:B/40:B)	
Q320	8-729-804-41	TRANSISTOR 2SB1122-S	
Q321	8-729-802-91	TRANSISTOR 2SD879	
Q461	8-729-043-29	TRANSISTOR PDTC144EK-115	
Q501	8-729-043-32	TRANSISTOR PDTA114EK-115	(10,30,40:EXCEPT EE)
Q502	8-729-043-29	TRANSISTOR PDTC144EK-115	(10,30,40:EXCEPT EE)
Q510	8-729-216-22	TRANSISTOR 2SA1162-G	
Q540	8-729-216-22	TRANSISTOR 2SA1162-G (B,CP,VC,VC1,VC2)	
Q541	8-729-216-22	TRANSISTOR 2SA1162-G (B,CP,VC,VC1,VC2)	
Q580	8-729-043-29	TRANSISTOR PDTC144EK-115	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
Q581	8-729-043-29	TRANSISTOR PDTC144EK-115	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
Q582	8-729-043-29	TRANSISTOR PDTC144EK-115	(10/20/30:EE/EXCEPT 40:EE,EG/X40)
Q583	8-729-422-33	TRANSISTOR 2PD601AR-115	(25/30/40:B,CP,VC2,VC1/45/X25)
Q590	8-729-422-33	TRANSISTOR 2PD601AR-115 (30:EE)	
Q591	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q600	8-729-018-99	TRANSISTOR 2SD2394-F	
Q601	8-729-140-93	TRANSISTOR 2SB733-34	
Q602	8-729-140-96	TRANSISTOR 2SD774-34	(10,30,40:EXCEPT EE)
Q603	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q604	8-729-119-79	TRANSISTOR 2SC2785-FEK	
Q605	8-729-043-32	TRANSISTOR PDTA114EK-115	(10,30,40:EXCEPT EE)
Q606	8-729-043-29	TRANSISTOR PDTC144EK-115	(10,30,40:EXCEPT EE)
Q607	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	(B,CP,VC,VC1,VC2)
Q608	8-729-043-29	TRANSISTOR PDTC144EK-115	(B,CP,VC,VC1,VC2)
Q611	8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q660	8-729-216-22	TRANSISTOR 2SA1162-G	
Q661	8-729-216-22	TRANSISTOR 2SA1162-G	
Q750	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	(10:EE/30:EE/40:EE)
Q751	8-729-043-29	TRANSISTOR PDTC144EK-115	(10,30,40:EXCEPT EE)
Q752	8-729-216-22	TRANSISTOR 2SA1162-G	(10,30,40:EXCEPT EE)
Q800	8-729-216-22	TRANSISTOR 2SA1162-G	(10/30:EE/EXCEPT 40:EE/X10/X40)
Q801	8-729-422-33	TRANSISTOR 2PD601AR-115	(10/30:EE/EXCEPT 40:EE/X10/X40)
Q802	8-729-422-33	TRANSISTOR 2PD601AR-115	(10/30:EE/EXCEPT 40:EE/X10/X40)
Q803	8-729-422-33	TRANSISTOR 2PD601AR-115	(10/30:EE/EXCEPT 40:EE/X10/X40)
Q804	8-729-043-29	TRANSISTOR PDTC144EK-115	(10/30:EE/EXCEPT 40:EE/X10/X40)
Q850	8-729-216-22	TRANSISTOR 2SA1162-G	(EXCEPT CP,EE,10,X10,X40)
Q870	8-729-043-29	TRANSISTOR PDTC144EK-115 (30:EE)	
Q871	8-729-422-33	TRANSISTOR 2PD601AR-115 (30:EE)	
Q970	8-729-216-22	TRANSISTOR 2SA1162-G (25:B/40:B)	
Q972	8-729-043-32	TRANSISTOR PDTA114EK-115 (25:B/40:B)	
Q973	8-729-422-33	TRANSISTOR 2PD601AR-115 (25:B/40:B)	
Q974	8-729-422-33	TRANSISTOR 2PD601AR-115 (25:B/40:B)	
Q975	8-729-043-32	TRANSISTOR PDTA114EK-115 (25:B/40:B)	
Q976	8-729-043-29	TRANSISTOR PDTC144EK-115 (25:B/40:B)	
		< RESISTOR >	

R100	1-216-089-91	RES,CHIP	47K	5%	1/10W
R101	1-249-413-11	CARBON	470	5%	1/4W F
R102	1-216-089-91	RES,CHIP	47K	5%	1/10W
R103	1-216-081-00	METAL CHIP	22K	5%	1/10W
R104	1-216-049-91	RES,CHIP	1K	5%	1/10W
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R106	1-249-400-11	CARBON	39	5%	1/4W F
R107	1-249-400-11	CARBON	39	5%	1/4W F
R108	1-216-081-00	METAL CHIP	22K	5%	1/10W
R114	1-216-089-91	RES,CHIP	47K	5%	1/10W
R115	1-216-089-91	RES,CHIP	47K	5%	1/10W
R120	1-216-089-91	RES,CHIP	47K	5%	1/10W
R121	1-216-089-91	RES,CHIP	47K	5%	1/10W
R123	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R124	1-216-041-00	METAL CHIP	470	5%	1/10W
R130	1-216-077-00	METAL CHIP	15K	5%	1/10W
R132	1-216-041-00	METAL CHIP	470	5%	1/10W
R133	1-216-089-91	RES,CHIP	47K	5%	1/10W
R142	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R143	1-216-065-91	RES,CHIP	4.7K	5%	1/10W

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remarks
R160	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
						(20:EX,UX/30:UX/45:UX)
R160	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
						(30:EE/40:CP,VC1/45:CP,VC)
R160	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
						(25:B/40:B)
R160	1-216-085-00	METAL CHIP	33K	5%	1/10W	
						(10:AE2/20:VP2/30:VC2/40:VC2/X25)
R160	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
						(40:EE)
R160	1-216-075-00	METAL CHIP	12K	5%	1/10W	
						(10:EG/40:EG,X40,X10)
R160	1-216-295-91	SHORT	0			
						(10:AE1,EE/20:VP1/25:CP,VC/30:CP,VC1)
R161	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
						(30:CP,VC2/40:EG/45:UX,VC)
R161	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
						(25:VC/30:UX/40:B/45:CP/X25)
R161	1-216-295-91	SHORT	0			
						(10:AE2,EG/20:UX/25:B,CP/40:CP/X10)
R161	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
						(30:VC1/40:VC2/X40)
R161	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
						(20:EX,VP1,VP2/40:VC1)
R161	1-216-075-00	METAL CHIP	12K	5%	1/10W	
						(10:AE1)
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R167	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R168	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R169	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R170	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R173	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R176	1-216-037-00	METAL CHIP	330	5%	1/10W	
R177	1-216-041-00	METAL CHIP	470	5%	1/10W	
R178	1-216-041-00	METAL CHIP	470	5%	1/10W	
R179	1-216-041-00	METAL CHIP	470	5%	1/10W	
R180	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R181	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R182	1-216-041-00	METAL CHIP	470	5%	1/10W	
R183	1-216-041-00	METAL CHIP	470	5%	1/10W	
R184	1-216-295-91	SHORT	0			
R185	1-216-295-91	SHORT	0			
R189	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R195	1-216-022-00	METAL CHIP	75	5%	1/10W	
R197	1-216-022-00	METAL CHIP	75	5%	1/10W	
R198	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R199	1-216-093-91	RES,CHIP	68K	5%	1/10W	
						(10:EE,EG/20/25/30/40/45/X10/X40)
R200	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R203	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R204	1-216-037-00	METAL CHIP	330	5%	1/10W	
R205	1-216-037-00	METAL CHIP	330	5%	1/10W	
R206	1-216-045-00	METAL CHIP	680	5%	1/10W	
						(40,45,X40)
R206	1-216-047-91	RES,CHIP	820	5%	1/10W	
						(10/20/25/30/X10/X25)
R207	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
						(40,45,X40)
R207	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
						(10/20/25/30/X10/X25)

Ref. No.	Part No.	Description				Remarks
R208	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
R209	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
						(40,45,X40)
R209	1-216-077-00	METAL CHIP	15K	5%	1/10W	
						(10/20/25/30/X10/X25)
R210	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R211	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R212	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R213	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R214	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R215	1-216-025-91	RES,CHIP	100	5%	1/10W	
R216	1-216-109-00	METAL CHIP	330K	5%	1/10W	
						(40,45,X40)
R216	1-216-117-00	METAL CHIP	680K	5%	1/10W	
						(10/20/25/30/X10/X25)
R217	1-216-025-91	RES,CHIP	100	5%	1/10W	
						(B,CP,VC,VC1,VC2)
R218	1-216-295-91	SHORT	0			
R219	1-216-025-91	RES,CHIP	100	5%	1/10W	
R220	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R221	1-216-017-91	RES,CHIP	47	5%	1/10W	
R222	1-216-017-91	RES,CHIP	47	5%	1/10W	
						(30,45)
R223	1-216-017-91	RES,CHIP	47	5%	1/10W	
						(10/20/30:EE/EXCEPT 40:EE,EG/X40)
R224	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R225	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R226	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R227	1-216-295-91	SHORT	0			
R228	1-216-295-91	SHORT	0 (25:B/40:B)			
R232	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
						(10/20/25/30/X10/X25)
R233	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
						(25:B/40:B)
R270	1-216-043-91	RES,CHIP	560	5%	1/10W	
						(40,45,X40)
R271	1-216-043-91	RES,CHIP	560	5%	1/10W	
R272	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
						(40,45,X40)
R272	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
						(20:EX,UX/25:CP/VC30:EXCEPT EE/X25)
R272	1-216-049-91	RES,CHIP	1K	5%	1/10W	
						(10/20:VP1,VP2/25:B/30:EE/X10)
R273	1-216-295-91	SHORT	0			
R274	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
						(40,45,X40)
R274	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
						(10/20/25/30/X10/X25)
R276	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R277	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R278	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R279	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R280	1-216-097-91	RES,CHIP	100K	5%	1/10W	
R283	1-216-295-91	SHORT	0			
R284	1-216-295-91	SHORT	0			
R300	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R301	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R303	1-216-063-91	RES,CHIP	3.9K	5%	1/10W	
R305	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R306	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	

Ref. No.	Part No.	Description			Remarks
R311	1-216-035-00	METAL CHIP	270	5%	1/10W
R312	1-216-109-00	METAL CHIP	330K	5%	1/10W
R313	1-216-047-91	RES,CHIP	820	5%	1/10W
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R319	1-216-093-91	RES,CHIP	68K	5%	1/10W
R320	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R321	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R322	1-216-079-00	METAL CHIP	18K	5%	1/10W
R323	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R324	1-216-089-91	RES,CHIP	47K	5%	1/10W
R325	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (30,45)
R326	1-216-093-91	RES,CHIP	68K	5%	1/10W (30,45)
R327	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R328	1-216-093-91	RES,CHIP	68K	5%	1/10W
R329	1-216-031-00	METAL CHIP	180	5%	1/10W
R330	1-216-017-91	RES,CHIP	47	5%	1/10W
R331	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R332	1-216-075-00	METAL CHIP	12K	5%	1/10W
R333	1-216-079-00	METAL CHIP	18K	5%	1/10W
R334	1-217-671-11	METAL CHIP	1	5%	1/10W
R335	1-216-081-00	METAL CHIP	22K	5%	1/10W
R420	1-216-295-91	SHORT	0		
R421	1-216-295-91	SHORT	0		
R422	1-216-049-91	RES,CHIP	1K	5%	1/10W
R423	1-216-295-91	SHORT	0		
R426	1-216-041-00	METAL CHIP	470	5%	1/10W (45)
R461	1-216-073-00	METAL CHIP	10K	5%	1/10W
R463	1-216-073-00	METAL CHIP	10K	5%	1/10W
R464	1-216-037-00	METAL CHIP	330	5%	1/10W
R466	1-216-037-00	METAL CHIP	330	5%	1/10W
R467	1-216-049-91	RES,CHIP	1K	5%	1/10W
R468	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R469	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R470	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R471	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R472	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R473	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R474	1-216-081-00	METAL CHIP	22K	5%	1/10W
R475	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R500	1-216-041-00	METAL CHIP	470	5%	1/10W
R501	1-216-041-00	METAL CHIP	470	5%	1/10W
R502	1-216-041-00	METAL CHIP	470	5%	1/10W (30,40:EXCEPT EE)
R502	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (10:EE/30:EE/40:EE)
R503	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (30:EE)
R510	1-249-407-11	CARBON	150	5%	1/4W F (10/20:UX,VP1,VP2/25:CP,VC/30:UX,EE/40:EE,EG/45:UX/X10/X25/X40,)
R510	1-249-408-11	CARBON	180	5%	1/4W F (20:EX/25:B/30:CP,VC1,VC2/40:B,CP,VC1,VC2/45:CP,VC)
R511	1-249-407-11	CARBON	150	5%	1/4W F
R512	1-216-022-00	METAL CHIP	75	5%	1/10W
R514	1-216-037-00	METAL CHIP	330	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R515	1-216-049-91	RES,CHIP	1K	5%	1/10W (10,30,40:EXCEPT EE)
R516	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (10,30,40:EXCEPT EE)
R517	1-216-022-00	METAL CHIP	75	5%	1/10W
R541	1-216-025-91	RES,CHIP	100	5%	1/10W (B,CP,VC,VC1,VC2)
R542	1-249-408-11	CARBON	180	5%	1/4W F (B,CP,VC,VC1,VC2)
R545	1-216-085-00	METAL CHIP	33K	5%	1/10W (B,CP,VC,VC1,VC2)
R546	1-216-089-91	RES,CHIP	47K	5%	1/10W (B,CP,VC,VC1,VC2)
R547	1-216-049-91	RES,CHIP	1K	5%	1/10W (B,CP,VC,VC1,VC2)
R548	1-216-022-00	METAL CHIP	75	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R549	1-216-022-00	METAL CHIP	75	5%	1/10W (B,CP,VC,VC1,VC2)
R550	1-216-022-00	METAL CHIP	75	5%	1/10W (B,CP,VC,VC1,VC2)
R551	1-216-022-00	METAL CHIP	75	5%	1/10W (B,CP,VC,VC1,VC2)
R570	1-216-041-00	METAL CHIP	470	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R571	1-216-041-00	METAL CHIP	470	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R572	1-216-041-00	METAL CHIP	470	5%	1/10W (B,CP,VC,VC1,VC2)
R574	1-216-097-91	RES,CHIP	100K	5%	1/10W (B,CP,VC,VC1,VC2)
R580	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R581	1-216-049-91	RES,CHIP	1K	5%	1/10W
R582	1-216-073-00	METAL CHIP	10K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R583	1-216-073-00	METAL CHIP	10K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R584	1-216-073-00	METAL CHIP	10K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R585	1-216-097-91	RES,CHIP	100K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R586	1-216-097-91	RES,CHIP	100K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R587	1-216-097-91	RES,CHIP	100K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R588	1-216-097-91	RES,CHIP	100K	5%	1/10W (45/40:B,CP,VC2,VC1/30/25/X25)
R589	1-216-097-91	RES,CHIP	100K	5%	1/10W (10/20/30:EE/EXCEPT 40:EE,EG/X40)
R590	1-216-049-91	RES,CHIP	1K	5%	1/10W
R591	1-216-049-91	RES,CHIP	1K	5%	1/10W (30:EE)
R592	1-216-073-00	METAL CHIP	10K	5%	1/10W (25/30/40:B,CP,VC1,VC2/45/X25)
R593	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (25/30/40:B,CP,VC1,VC2/45/X25)
R594	1-216-077-00	METAL CHIP	15K	5%	1/10W (25/30/40:B,CP,VC1,VC2/45/X25)
R595	1-216-295-91	SHORT	0 (EXCEPT 30,45:EE)		
R597	1-216-041-00	METAL CHIP	470	5%	1/10W
R598	1-216-041-00	METAL CHIP	470	5%	1/10W (30:EE)
R600	1-249-417-11	CARBON	1K	5%	1/4W F

Ref. No.	Part No.	Description				Remarks
R601	1-249-417-11	CARBON	1K	5%	1/4W	F
R602	1-216-089-91	RES,CHIP	47K	5%	1/10W	(10,30,40:EXCEPT EE)
R603	1-216-452-11	METAL OXIDE	180	5%	2W	F
R604	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
R605	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
R606	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	(10,30,40:EXCEPT EE)
R607	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R608	1-249-414-11	CARBON	560	5%	1/4W	F
R609	1-247-815-91	CARBON	220	5%	1/4W	
R610	1-247-815-91	CARBON	220	5%	1/4W	
R611	1-216-049-91	RES,CHIP	1K	5%	1/10W	(B,CP,VC,VC1,VC2)
R612	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R613	1-215-907-11	METAL OXIDE	22	5%	3W	F
R614	1-215-857-11	METAL OXIDE	10	5%	1W	F
R615	1-216-049-91	RES,CHIP	1K	5%	1/10W	(B,CP,VC,VC1,VC2)
R616	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R617	1-216-049-91	RES,CHIP	1K	5%	1/10W	(B,CP,VC,VC1,VC2)
R618	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	(B,CP,VC,VC1,VC2)
R622	1-260-073-11	CARBON	5.6	5%	1/2W	
R623	1-260-073-11	CARBON	5.6	5%	1/2W	
R660	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R661	1-216-121-91	RES,CHIP	1M	5%	1/10W	
R662	1-216-041-00	METAL CHIP	470	5%	1/10W	
R663	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R666	1-216-295-91	SHORT	0			
R667	1-216-037-00	METAL CHIP	330	5%	1/10W	
R668	1-216-025-91	RES,CHIP	100	5%	1/10W	
R669	1-216-025-91	RES,CHIP	100	5%	1/10W	
R670	1-216-041-00	METAL CHIP	470	5%	1/10W	
R671	1-216-295-91	SHORT	0			
R672	1-216-049-91	RES,CHIP	1K	5%	1/10W	(B,EE,EG)
R702	1-216-295-91	SHORT	0			
R704	1-216-041-00	METAL CHIP	470	5%	1/10W	
R705	1-216-041-00	METAL CHIP	470	5%	1/10W	
⚠R711	1-212-895-00	FUSIBLE	390	5%	1/4W	F
R713	1-216-025-91	RES,CHIP	100	5%	1/10W	
R714	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R731	1-216-041-00	METAL CHIP	470	5%	1/10W	(EXCEPT UX,EE,EG)
R733	1-216-041-00	METAL CHIP	470	5%	1/10W	(EXCEPT UX)
R751	1-216-009-91	RES,CHIP	22	5%	1/10W	(10:EE/30:EE/40:EE)
R754	1-216-041-00	METAL CHIP	470	5%	1/10W	
R755	1-216-041-00	METAL CHIP	470	5%	1/10W	
R756	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10,30,40:EXCEPT EE)
R757	1-216-049-91	RES,CHIP	1K	5%	1/10W	(10,30,40:EXCEPT EE)
R800	1-216-101-00	METAL CHIP	150K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)

Ref. No.	Part No.	Description				Remarks
R801	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R802	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R803	1-216-081-00	METAL CHIP	22K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R804	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R805	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R806	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R807	1-216-085-00	METAL CHIP	33K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R813	1-216-073-00	METAL CHIP	10K	5%	1/10W	(10/30:EE/EXCEPT 40:EE/X10/X40)
R850	1-216-025-91	RES,CHIP	100	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R851	1-216-077-00	METAL CHIP	15K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R852	1-216-081-00	METAL CHIP	22K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R853	1-216-049-91	RES,CHIP	1K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R856	1-216-097-91	RES,CHIP	100K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R857	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R858	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R859	1-216-123-11	METAL CHIP	1.2M	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R860	1-216-123-11	METAL CHIP	1.2M	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R861	1-216-117-00	METAL CHIP	680K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R862	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(EXCEPT CP,EE,10,X10,X40)
R870	1-216-097-91	RES,CHIP	100K	5%	1/10W	(30:EE)
R871	1-216-073-00	METAL CHIP	10K	5%	1/10W	(30:EE)
R872	1-216-073-00	METAL CHIP	10K	5%	1/10W	(30:EE)
R873	1-216-049-91	RES,CHIP	1K	5%	1/10W	(30:EE)
R874	1-216-033-00	METAL CHIP	220	5%	1/10W	(30:EE)
R875	1-216-077-00	METAL CHIP	15K	5%	1/10W	(30:EE)
R876	1-216-073-00	METAL CHIP	10K	5%	1/10W	(30:EE)
R877	1-216-077-00	METAL CHIP	15K	5%	1/10W	(30:EE)
R878	1-216-089-91	RES,CHIP	47K	5%	1/10W	(30:EE)
R879	1-216-073-00	METAL CHIP	10K	5%	1/10W	(30:EE)
R880	1-216-081-00	METAL CHIP	22K	5%	1/10W	(30:EE)

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
R881	1-216-081-00	METAL CHIP	22K	5%	1/10W (30:EE)
R882	1-216-081-00	METAL CHIP	22K	5%	1/10W (30:EE)
R883	1-216-089-91	RES,CHIP	47K	5%	1/10W (30:EE)
R884	1-216-089-91	RES,CHIP	47K	5%	1/10W (30:EE)
R885	1-216-073-00	METAL CHIP	10K	5%	1/10W (30:EE)
R886	1-216-033-00	METAL CHIP	220	5%	1/10W (30:EE)
R887	1-216-081-00	METAL CHIP	22K	5%	1/10W (30:EE)
R888	1-216-097-91	RES,CHIP	100K	5%	1/10W (30:EE)
R968	1-216-101-00	METAL CHIP	150K	5%	1/10W (25:B/40:B)
R969	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (25:B/40:B)
R970	1-216-085-00	METAL CHIP	33K	5%	1/10W (25:B/40:B)
R971	1-216-085-00	METAL CHIP	33K	5%	1/10W (25:B/40:B)
R972	1-216-083-00	METAL CHIP	27K	5%	1/10W (25:B/40:B)
R973	1-216-105-91	RES,CHIP	220K	5%	1/10W (25:B/40:B)
R974	1-216-081-00	METAL CHIP	22K	5%	1/10W (25:B/40:B)
R975	1-216-295-91	SHORT	0 (25:B/40:B)		
R976	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (25:B/40:B)
R977	1-216-089-91	RES,CHIP	47K	5%	1/10W (25:B/40:B)
R978	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (25:B/40:B)
R979	1-216-073-00	METAL CHIP	10K	5%	1/10W (25:B/40:B)
R980	1-216-097-91	RES,CHIP	100K	5%	1/10W (25:B/40:B)
R981	1-216-083-00	METAL CHIP	27K	5%	1/10W (25:B/40:B)
R982	1-216-089-91	RES,CHIP	47K	5%	1/10W (25:B/40:B)
R983	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (25:B/40:B)
R985	1-216-041-00	METAL CHIP	470	5%	1/10W (25:B/40:B)
R986	1-216-089-91	RES,CHIP	47K	5%	1/10W (25:B/40:B)
R988	1-216-073-00	METAL CHIP	10K	5%	1/10W (25:B/40:B)
R989	1-216-049-91	RES,CHIP	1K	5%	1/10W (25:B/40:B)
R990	1-216-295-91	SHORT	0 (25:B/40:B)		
R993	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (25:B/40:B)
R994	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (25:B/40:B)
R995	1-216-073-00	METAL CHIP	10K	5%	1/10W (25:B/40:B)
R996	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (25:B/40:B)
R997	1-216-073-00	METAL CHIP	10K	5%	1/10W (25:B/40:B)
R998	1-216-073-00	METAL CHIP	10K	5%	1/10W (25:B/40:B)
R999	1-216-295-91	SHORT	0 (25:B/40:B)		
		< SWITCH >			
S100	1-771-155-11	SWITCH, ROTARY (MECHANISM MODE)			
S101	1-762-108-11	SWITCH, PUSH (1 KEY) (REC PROOF)			
S160	1-571-588-11	SWITCH, SLIDE (ON PAL TV/NTSC 4.43) (EXCEPT 10:AE1,AE2)			
S460	1-771-574-21	SWITCH, TACTILE (POWER)			
S461	1-771-574-21	SWITCH, TACTILE (EJECT)			
S462	1-771-574-21	SWITCH, TACTILE (PAUSE)			
S463	1-771-574-21	SWITCH, TACTILE (REC)			
S464	1-771-574-21	SWITCH, TACTILE (PROGRAM–)			
S465	1-771-574-21	SWITCH, TACTILE(AUTO SET UP/RF CHANNEL)			
S466	1-771-574-21	SWITCH, TACTILE(PROGRAM+)			
		< TRANSFORMER >			
T320	1-431-097-11	TRANSFORMER, BIAS OSCILLATION			
		< TUNER >			
TU700	1-693-433-11	TUNER, IF (BTF-3MC404) (EXCEPT UX,B,VP1,VP2,EE,EG)			
TU700	1-693-435-11	TUNER, IF (BTF-3MC445) (25:B/40:B)			
TU700	1-693-431-11	TUNER, IF (BTF-2MC421) (10:AE1,AE2/20:VP1,VP2/25:CP,VC/X25)			
TU701	1-693-434-11	TUNER, IF (BTF-3MU604) (20:UX/30:UX/45:UX)			
TU701	1-693-431-11	TUNER, IF (BTF-2MC421) (10:EE,EG/30:EE/40:EE,EG,X10,X40)			
		< VIBRATOR >			
X160	1-579-463-11	VIBRATOR, CRYSTAL 32.768KHz			
X161	1-577-289-11	VIBRATOR, CRYSTAL 17.734475KHz			
X200	1-579-608-11	VIBRATOR, CRYSTAL 4.43MHz			
⚠	1-468-271-31	POWER BLOCK ETXNY165E1D ********** (Ref.No.:9,000 Series)			
		< CAPACITOR >			
C102	1-216-964-11	ELECT	10uF	50V	
C107	1-216-965-11	ELECT	22uF	50V	
C201	1-216-968-11	ELECT	100uF	50V	
C301	9-880-907-01	ELECT	820uF	25V	
C302	1-216-968-11	ELECT	100uF	50V	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK ETXNY165E1D

Ref. No.	Part No.	Description		Remarks
C401	9-880-908-01	ELECT	820uF	16V
C402	1-126-925-11	ELECT	470uF	10V
C501	1-126-960-11	ELECT	1uF	50V
C601	9-880-909-01	ELECT	330uF	25V
		< DIODE >		
D001	8-719-066-97	DIODE 1N4007		
D002	8-719-066-97	DIODE 1N4007		
D003	8-719-066-97	DIODE 1N4007		
D004	8-719-066-97	DIODE 1N4007		
D101	9-880-910-01	DIODE 1SS130T-77		
D102	9-880-911-01	DIODE FE1E		
D103	9-880-912-01	DIODE BYV36E		
D104	9-880-913-01	DIODE 1SS130T-77		
D201	9-880-914-01	DIODE FE1E		
D301	9-880-915-01	DIODE FE3C		
D401	9-880-916-01	DIODE SB260		
D601	9-880-917-01	DIODE FE1E		
		< IC >		
IC101	9-880-919-01	IC UC3844A		
IC501	9-880-920-01	IC KA431AZTA		
		< PHOTOCOUPLER >		
⚠PC101	9-880-921-01	PHOTOCOUPLER LTV817BM-V		
		< TRANSISTOR >		
Q101	9-880-922-01	POWER FET SSS2N90-A		
Q102	8-729-423-29	TRANSISTOR 2SC3311A-QTA		
		< VARISTOR >		
⚠Z001	9-880-923-01	METALOXID-VARISTOR S10K460		
		< ZENER DIODE >		
ZD101	9-880-924-01	ZENER DIODE RD5.1		
ZD102	9-880-925-01	ZENER DIODE RD24JSB3T		
ZD103	9-880-926-01	VOLTAGE SUPRESSOR P6KE350CA		
		MISCELLANEOUS		
		**********		
⚠14	1-777-854-21	CORD, POWER		
19	1-762-844-21	SWITCH, ROTARY (30,45:EE)		
⚠25	1-770-019-12	ADAPTOR, CONVERSION PLUG 3P		
⚠52	1-468-271-31	POWER BLOCK ETXNY165E1D		
704	1-500-144-11	HEAD, FE		
704	1-500-471-11	HEAD, FE		
776	1-759-791-11	DRUM ASSY, DZH-78D-R		(10/X10/20:VP1,VP2/25:B/30:EE)
776	1-759-793-11	DRUM ASSY, DZH-92B-R		(20:EX,UX/25:CP,VC/X25/30:CP,UX,VC1,VC2,X25)
776	1-759-795-11	DRUM ASSY, DZH-93B-R (40/X40/45)		
832	1-766-723-21	CONNECTOR, BOARD TO BOAR 3P		
M902	1-698-971-11	MOTOR, DC		
M903	X-3947-577-1	MOTOR ASSY, CAM		

Ref. No.	Part No.	Description	Remarks
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-418-007-11	COMMANDER, STANDARD (RMT-V256)	(10,X10,30:EE)
	1-418-007-21	COMMANDER, STANDARD(RMT-V256A)(40:EE)	
	1-418-008-11	COMMANDER, STANDARD (RMT-V257)	(20:VP1,VP2)
	1-418-008-21	COMMANDER, STANDARD (RMT-V257A) (25:B)	
	1-418-008-31	COMMANDER, STANDARD (RMT-V257B)	(EG/20:EX,UX/25:CP,VC,X25,40:CP,EG,VC1,VC2/X40)
	1-418-008-41	COMMANDER, STANDARD (RMT-V257C) (40:B)	
	1-418-010-11	COMMANDER, STANDARD (RMT-V259)	(30:CP,UX,VC2,VC1/45)
	1-696-593-11	CORD,CONNECTION (PAL) (FOR RF 1.5m)	
	3-865-171-11	MANUAL, INSTRUCTION(FRENCH) (10:AE1)	
	3-865-171-21	MANUAL, INSTRUCTION (SPANISH) (10:AE2)	
	3-865-171-31	MANUAL, INSTRUCTION (GERMAN) (10:AE1)	
	3-865-171-41	MANUAL, INSTRUCTION (ITALIAN) (10:AE1)	
	3-865-171-51	MANUAL, INSTRUCTION (DUTCH) (10:AE1)	
	3-865-171-61	MANUAL, INSTRUCTION (PORTUGUESE)	(10:AE2)
	3-865-172-11	MANUAL, INSTRUCTION (SWEDISH) (10:AE2)	
	3-865-172-21	MANUAL, INSTRUCTION (DANISH) (10:AE2)	
	3-865-172-31	MANUAL, INSTRUCTION (FINNISH) (10:AE2)	
	3-865-172-41	MANUAL, INSTRUCTION (GREEK) (10:AE1)	
	3-865-173-11	MANUAL, INSTRUCTION (ENGLISH) (40:EG)	
	3-865-173-21	MANUAL, INSTRUCTION (POLISH) (40:EG)	
	3-865-173-31	MANUAL, INSTRUCTION (CZECH) (40:EG)	
	3-865-173-41	MANUAL, INSTRUCTION (HUNGARIAN) (40:EG)	
	3-865-174-11	MANUAL, INSTRUCTION (ENGLISH)	(10:EG,X10)
	3-865-174-21	MANUAL, INSTRUCTION (POLISH) (10:EG,X10)	
	3-865-174-31	MANUAL, INSTRUCTION (HUNGARIAN)	(10:EG,X10)
	3-865-174-41	MANUAL, INSTRUCTION (HUNGARIAN)	(10:EG,X10)
	3-865-175-11	MANUAL, INSTRUCTION (ENGLISH)	(10:EE/40:EE)
	3-865-175-21	MANUAL, INSTRUCTION (RUSSIAN)	(10:EE/40:EE)
	3-865-274-11	MANUAL, INSTRUCTION (ENGLISH) (30:EE)	
	3-865-274-21	MANUAL, INSTRUCTION (RUSSIAN) (30:EE)	
	3-865-275-11	MANUAL, INSTRUCTION (ENGLISH) (X40)	
	3-865-275-21	MANUAL, INSTRUCTION (POLISH) (X40)	
	3-865-275-31	MANUAL, INSTRUCTION (CZECH) (X40)	
	3-865-275-41	MANUAL, INSTRUCTION (HUNGARIAN) (X40)	
	3-865-359-11	MANUAL, INSTRUCTION (FRENCH)	(30:VC1/45:VC)
	3-865-359-21	MANUAL, INSTRUCTION (SPANISH) (30:CP)	
	3-865-359-31	MANUAL, INSTRUCTION (GERMAN)	(30:VC1/45:VC)
	3-865-359-41	MANUAL, INSTRUCTION (ITALIAN)	(30:CP/45:CP,VC1)

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
	3-865-359-51	MANUAL, INSTRUCTION (DUTCH)	(30:VC1/45:VC)
	3-865-359-61	MANUAL, INSTRUCTION (PORUGUESE)	(30:VC2)
	3-865-360-11	MANUAL, INSTRUCTION (SWEDISH)	(30:VC2)
	3-865-360-21	MANUAL, INSTRUCTION (DANISH)	(30:VC2)
	3-865-360-31	MANUAL, INSTRUCTION (FINNISH)	(30:VC2)
	3-865-360-41	MANUAL, INSTRUCTION (GREEK)	(30:CP/45:CP)
	3-865-361-11	MANUAL, INSTRUCTION (ENGLISH)	(30:UX/45:UX)
	3-865-362-11	MANUAL, INSTRUCTION (FRENCH)	(25:VC/40:VC1)
	3-865-362-21	MANUAL, INSTRUCTION (SPANISH)	(25:CP/40:CP/X25)
	3-865-362-31	MANUAL, INSTRUCTION (GERMAN)	(25:VC/40:VC1/X25)
	3-865-362-41	MANUAL, INSTRUCTION (ITALIAN)	(40:CP,VC1/25:VC)
	3-865-362-51	MANUAL, INSTRUCTION (DUTCH)	(25:VC/40:VC1)
	3-865-362-61	MANUAL, INSTRUCTION (PORTUGUESE)	(40:VC2)
	3-865-363-11	MANUAL, INSTRUCTION (SWEDISH)	(40:VC2,X25)
	3-865-363-21	MANUAL, INSTRUCTION (DANISH)	(40:VC2,X25)
	3-865-363-31	MANUAL, INSTRUCTION (FINNISH)	(40:VC2,X25)
	3-865-363-41	MANUAL, INSTRUCTION (GREEK)	(40:CP)
	3-865-364-11	MANUAL, INSTRUCTION (FRENCH)	(40:B/25:B)
	3-865-365-11	MANUAL, INSTRUCTION (ENGLISH)	(20:EX,UX)
	3-865-439-11	MANUAL, INSTRUCTION (FRENCH)	(20:VP1)
	3-865-439-21	MANUAL, INSTRUCTION (GERMAN)(	20:VP1)
	3-865-439-31	MANUAL, INSTRUCTION (ITALIAN)	(20:VP1)
	3-865-439-41	MANUAL, INSTRUCTION (DUTCH)	(20:VP1)
	3-865-439-51	MANUAL, INSTRUCTION (SWEDISH)	(20:VP2)
	3-865-439-61	MANUAL, INSTRUCTION (DANISH)	(20:VP2)
	3-865-439-71	MANUAL, INSTRUCTION (FINNISH)	(20:VP2)
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-648-79	SCREW +BVTP 3 × 12 TYPE2	
#701	7-685-646-79	SCREW +BVTP 3 × 8 TYPE2 IT-3	
#702	7-682-147-01	SCREW +P 3 × 6	
#703	7-685-133-19	SCREW (DIA. 2.6) (IT3B)	

9-921-712-11

Sony Corporation
Home A&V Products Company

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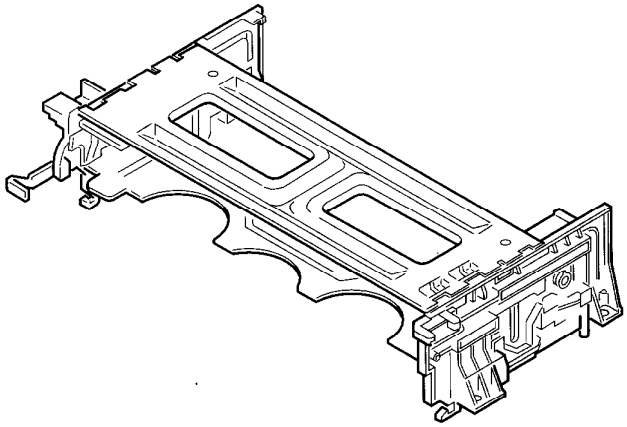
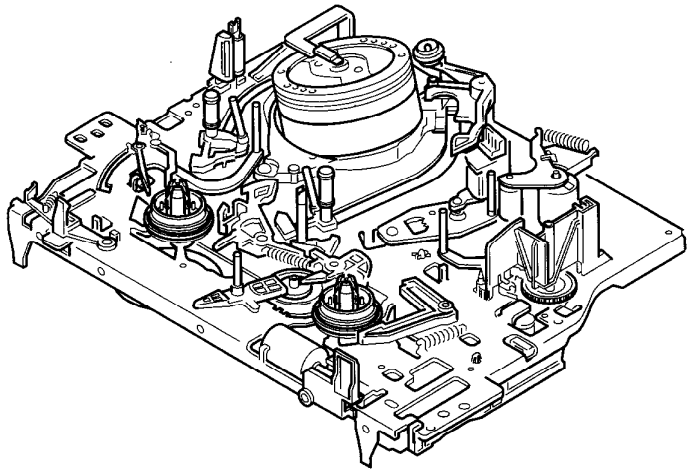
VHS MECHANICAL ADJUSTMENT MANUAL VI

S MECHANISM

VHS

Please use with the service manual.





VHS TAPE TRANSPORT MECHANISM DECK

MICROFILM

SONY®

ADJUSTMENTS REQUIRED THE FOLLOWING PARTS REPLACEMENT

PARTS / ADJUSTMENTS		4-1-1 TENSION REGULATOR POSITION/TENSION ADJUSTMENT	4-1-2 CHECKING THE TENSION AND TORQUE	4-1-3 X-VALUE ADJUSTMENT	4-1-4 HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6	4-1-5 ACE HEAD HEIGHT AND AZIMUTH ADJUSTMENT	4-1-6 X-VALUE FINE ADJUSTMENT	4-1-7 HEIGHT ADJUSTMENT OF GUIDE ROLLER NO. 8	4-1-8 CHECKING THE LINEARITY AND FLUCTUATION OF THE RF OUTPUT
3-25	REEL (S) TABLE	O	△	×	△	×	×	×	×
3-25	TG1 ASSEMBLY	O	×	×	△	×	×	×	×
3-6	FEH ASSEMBLY	×	×	×	△	×	×	×	×
3-23	DRUM BASE	×	×	O	O	O	O	O	O
3-2	DRUM ASSEMBLY	×	×	O	O	O	O	O	O
3-24	SHUTTLE (S) AND SHUTTLE (T) BLOCK ASSEMBLIES	×	×	O	O	O	O	O	×
3-5	ACE HEAD BLOCK	×	×	O	△	O	O	△	×
3-4	CAPSTAN MOTOR	×	×	×	△	O	O	O	×
3-3	PINCHI PRESS BLOCK ASS'Y	×	×	×	×	O	O	O	×
3-3	TG8 ASSEMBLY	×	×	×	×	×	×	O	×
3-10	REEL (T) TABLE	×	×	×	×	×	×	△	×
3-19	PULLEY GEAR ASSEMBLY	×	O	×	×	×	×	×	×
3-11	PENDULUM ARM ASSEMBLY	×	O	×	×	×	×	×	×

O: ADJUST
△: CHECK
×: NOT REQUIRED

1. PREPARATION FOR MECHANISM CHECKS, ADJUSTMENTS AND REPLACEMENT

For removal of the cabinet, printed wiring boards and others, please refer to the service manual "DISASSEMBLY".

1-1. LOADING AND THREADING PROCEDURE WHEN THE POWER TURNS OFF

1-1-1. LOADING AND THREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓐ direction until loading and threading are end.

1-1-2. LOADING AND THREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Applying approx. +9V (300mA) to cam motor with regulated DC power supply makes it loading and threading.

Note : When loading and threading without cassette, claws are caught in four positions as following figure (in the order ①-②-③-④).
So release them with hands.

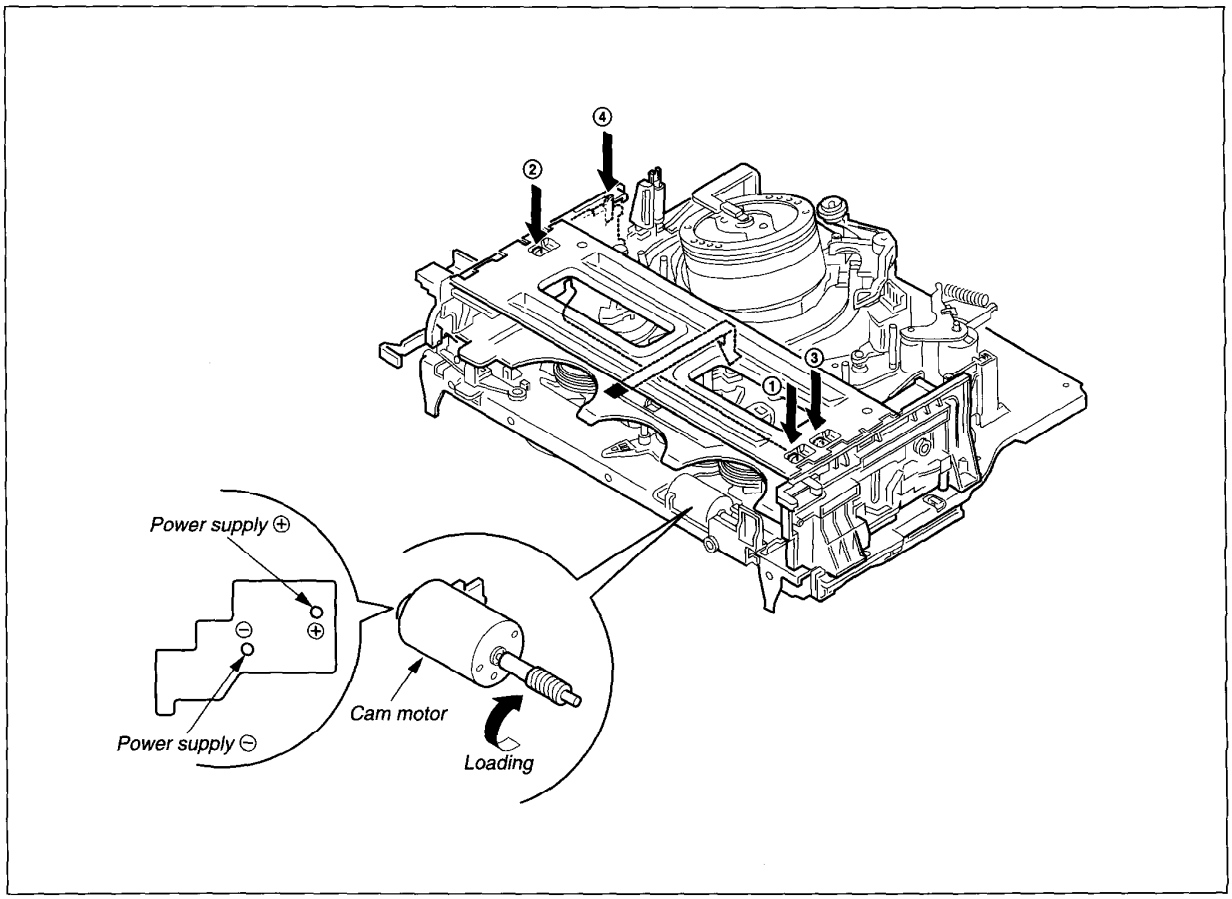


Fig. 1-1

1-2. UNLOADING AND UNTHREADING PROCEDURE WHEN THE POWER TURNS OFF

1-2-1. UNLOADING AND UNTHREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓑ direction until unthreading is end.
2) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.
3) Turn cam motor in the arrow Ⓑ direction until unloading is end.

1-2-2. UNLOADING AND UNTHREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Apply approx. +5V (300mA) to contrary polarities of cam motor.
2) Unthreading operation begins, tape guides return to their initial positions (Unthreading operation is end but tape remains), then stop cam motor by turning power off.

Note : When unloading begins and cassette lid is closed, turn cam motor in the arrow Ⓐ direction to open tape guard.

3) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.

Note : Take care that tape is not caught at pinch roller.

4) Check that tape is no loosened completely, and apply approx. +5V (300mA) to contrary polarities of cam motor with regulated DC power supply.

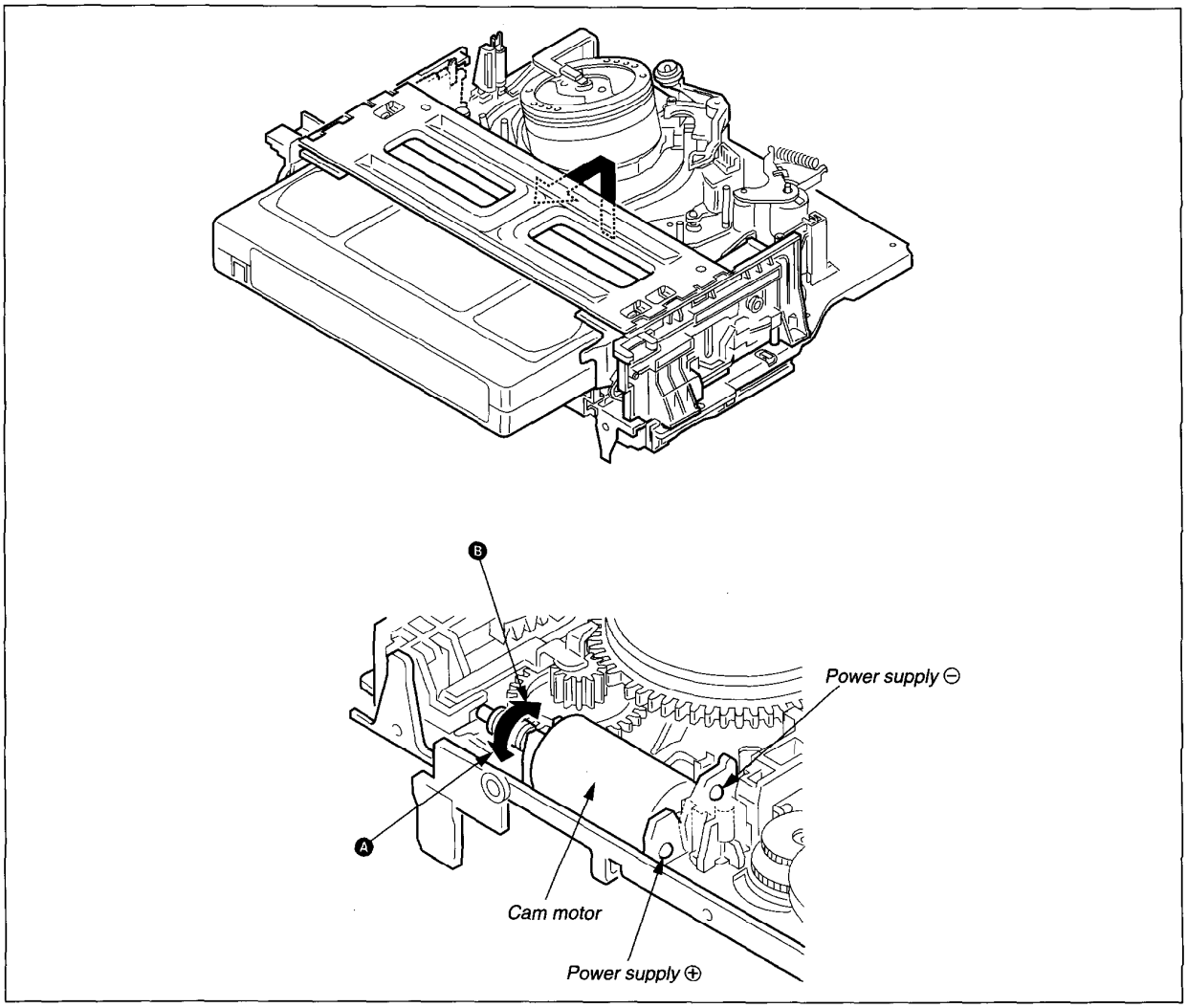


Fig. 1-2

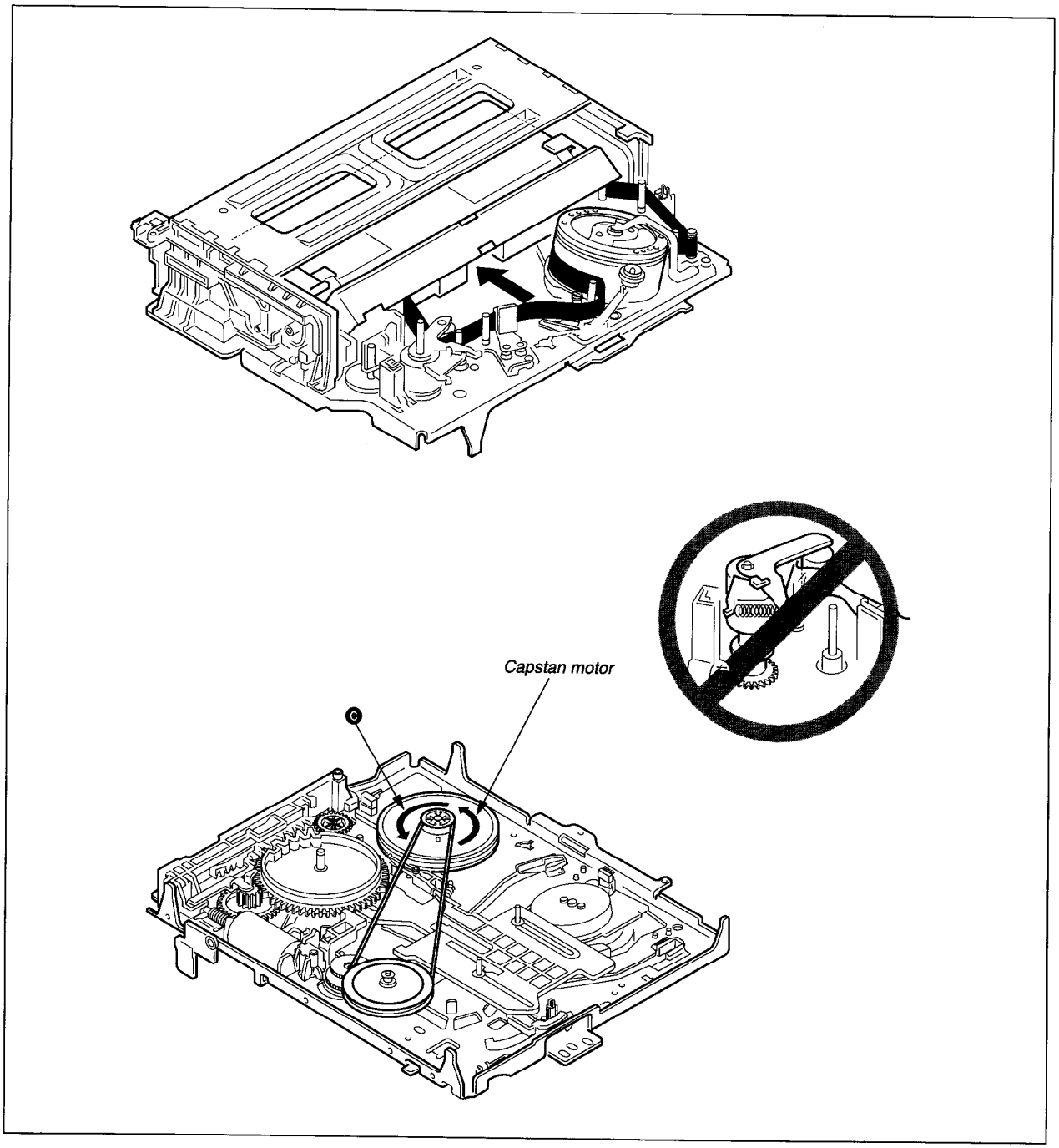


Fig. 1-3

1-3. HOW TO COMPLETE THREADING WITHOUT CASSETTE COMPARTMENT

Note 1 : Put the FL block assembly removed the FL top plate on the bottom not to put dust or grease the top sensor and the end sensor luminous plates or not to scratch them.

1) Pull out AC plug from wall outlet.
2) Shade near the end and top sensors with a black masking tape or the like.
3) Connect AC plug to wall outlet.

Note 2 : In this condition, some modes can not be set.
To make loading in this condition, set the video cassette tape without REC proof claw, pull the REC proof lever once and release it.
On loading without video cassette tape, it is necessary to deceive the microcomputer by turning the reel (T) table with hand.
Fast forward and rewind are not available.

Note 3 : After above mentioned operation, be sure to return the mode in the following order.

4) Pull out AC plug from wall outlet to reset the system control microcomputer.
5) Remove the tape near the end and top sensors.

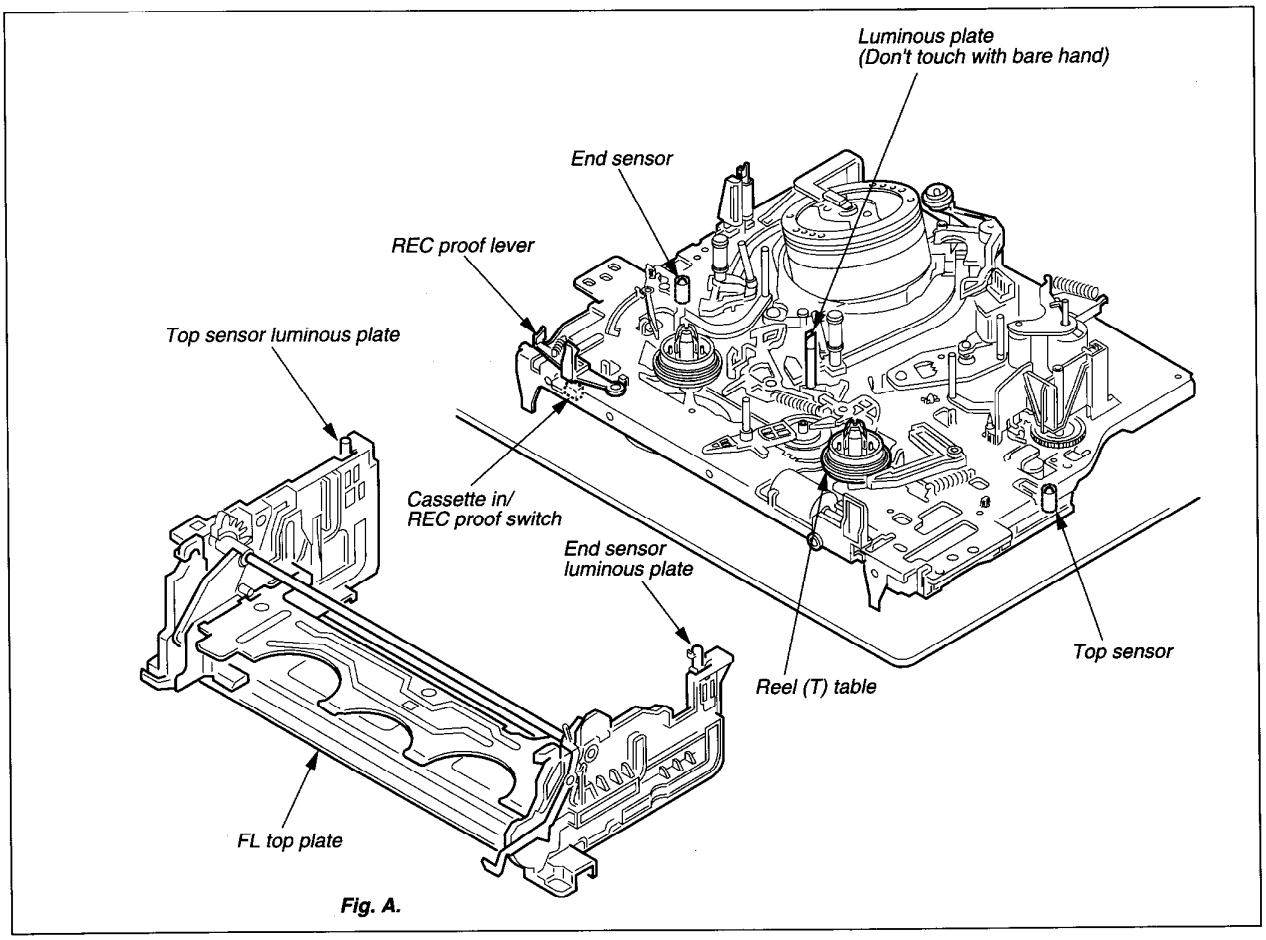


Fig. 1-4

2. PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

* The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1. CLEANING OF ROTATING HEAD DISK ASSEMBLY

1) Press a chamois cloth (Jig Ref. No. J-4) which has been dipped in cleaning fluid (Jig Ref. No. J-3) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by the hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-2. CLEANING OF THE TAPE MOVEMENT SYSTEM

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-3. CLEANING THE DRIVE SYSTEM

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

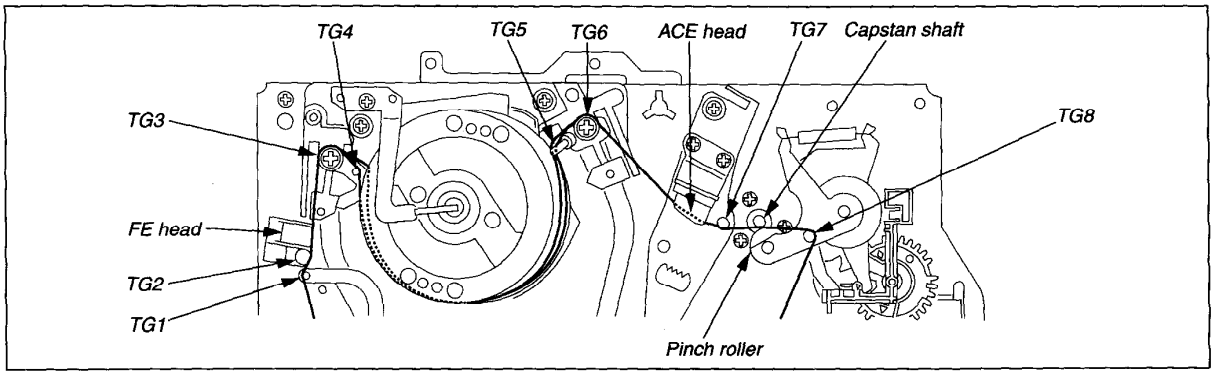


Fig. 2-1 Parts requiring cleaning

2-4. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users' operating hours.

Maintenance & Check \ Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Transportation System	Cleaning of tape transportation system	O	O	O	O	O	O	O	O	O	O	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE assembly	O	O	O	O	O	O	O	O	O	O	
	Cleaning and degaussing of upper drum assembly	O	O	O	O	O	O	O	O	O	O	The life of the head varies, depending on operational conditions and method.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to 4-1-1. Specified value : Adjust to 5.0504 to 6.5214mN•m (51.5 to 66.5g•cm) (without TC assembly*) or 3.7755 to 5.0994mN•m (38.5 to 52.0g•cm)(with TC assembly*)
	Confirmation of brake system	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section.
	Confirmation of record and playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 4.9033 to 8.8259mN•m (50 to 90 g•cm)

Note : On overhaul
When overhauling the unit, replace parts as indicated in the above table.

O : Cleaning ☆ : Confirmation

2-5. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref. No.	Name		Part No.	Caved Jig No.	Remarks
J-1	Torque Measurement Cassette VHT-103S		J-6090-072-A		For FWD & back tension torque measurement.
	Torque Measurement Cassette VHT-404S		J-6082-012-A		For CUE and REVIEW torque measurement.
J-2	Alignment Tape	KRV-52NE* (NTSC)	8-192-605-41		Tape path, Audio azimuth, X-value adjustments
		KRV-51N2 (NTSC)	8-192-605-32		Electrical adjustments, Operation checks
		KRV-52PL (PAL)	8-192-605-46		Tape path, Audio azimuth, X-value adjustments
		KRV-51P (PAL)	8-192-605-36		Electrical adjustments, Operation checks
J-3	Cleaning fluid		Y-2031-001-0	—	
J-4	Chamois Leather		2-034-697-00	—	
J-5	Dental Mirror (With Handle) Dental Mirror (Mirror)		J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustments or checks.
J-6	FLOIL SG-646		7-651-000-44		Net. 20g
J-7	Diamond Oil NT-68		7-661-018-18		
J-8	Screw Lock G (1401B)		7-432-114-11		
J-9	X-value adjusting driver		J-6090-073-A		X-value adjustment
J-10	Mode Selector II		J-6082-282-A	—	For S mechanism stand-alone operation
J-11	Connector Conversion Jig		J-6090-052-A	—	For S mechanism stand-alone operation
J-12	S Type Capstan Board		J-6090-075-A	—	For S mechanism stand-alone operation

* Be sure to use KRV-52NE having version number.

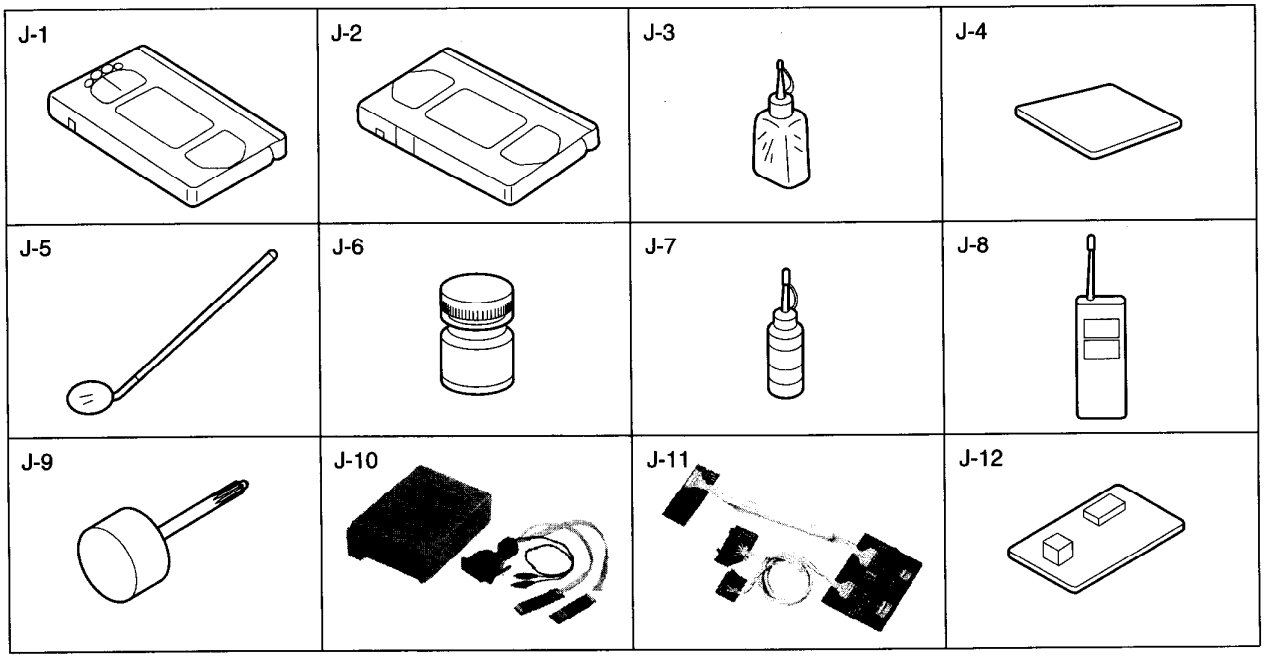


Fig. 2-2

2-6. HOW TO USE THE MODE SELECTOR II FOR ADJUSTING S TYPE MECHANISM ASSEMBLY

2-6-1. OUTLINE

To activate the VHS system S type mechanism assembly using mode selector II (J-6082-282-A), use connector conversion jig (J-6090-052-A) and the S type capstan board (J-6090-075-A). By using the connector conversion jig and the S type capstan board, the following operations are possible.

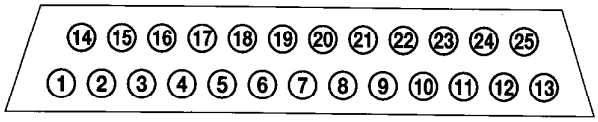
- Loading and unloading action by the loading motor.
- Normal and reverse rotation of the capstan motor.

2-6-2. PREPARATION

1) In order to drive the capstan motor, the power +5V and +12V are supplied from the Mode Selector II. Disassemble the D-SUB connector of the Mode Selector cable, then solder the following three places.

Supplied 3-pin cable	D-SUB connector of the Mode Selector II	Voltage
Pin 1 (Red index)	Pin 20	+12V
Pin 2	Pin 25	GND
Pin 3	Pin 24	+5V

- Connector pin number assignment of the D-SUB connector (From the soldering side)



- When connections are made, check that +5V and +12V are available at the 3-pin cable connector.

2) CHECKING THE SOFTWARE VERSION
Turn on the power of the Mode Selector II.
If the reading of the software version on the Mode Selector II is not 1.10 or higher, replace the new ROM (J-6082-314-A).

2-6-3. CONNECTION

1) S TYPE CAPSTAN BOARD ATTACHMENT
Replace the capstan board supplied with the connector conversion jig (J-6090-052-A) with the S type capstan board (J-6090-075-A).
2) CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE MODE SELECTOR II.
Insert the connectors of the two 6-pin cables (one is white and the other is black) and the 3-pin cable from the Mode Selector II to the corresponding connectors on the connector conversion jig (J-6090-052-A).
3) CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE S TYPE MECHANISM ASSEMBLY
With the power of the Mode Selector II turned off, insert the following two connectors to the corresponding connectors on the S type mechanism assembly.
   - 3-pin connector for the loading motor
   - 10-pin connector for the capstan motor

Set the speed control for the minimum setting (fully counterclockwise).

2-6-4. OPERATION

1) OPERATION OF THE LOADING MOTOR ON THE S TYPE MECHANISM ASSEMBLY
   ① Select the H type mechanism assembly setting on the Mode Selector II.
   ② Operating procedures after the mechanism selection
   For the operating procedures, see pages 3 to 5 of "8mm Video Mechanical Adjustment Manual IV (TK Mechanism) Supplement-1".
   For the loading procedure, see page 4 of "VHS Mechanical Adjustment manual IV (S Mechanism)".
2) OPERATION OF THE CAPSTAN MOTOR ON THE S TYPE MECHANISM ASSEMBLY
   ① By the loading motor operation under the item 1), change the mode setting to the FF/REW mode.
   ② Turn the speed control gradually in clockwise direction, then the capstan motor starts rotating. To turn the capstan motor in desired rotating direction, change the FF/REW setting of the rotating direction switch.

2-6-5. PRECAUTIONS

- Turn the speed control only when necessary. Otherwise, hold the speed control turned at fully counterclockwise direction. If the power of the Mode Selector II is turned on with the speed control turned in clockwise direction, +12V power fails and the power of the Mode Selector II cannot be turned on.
- Although the connector conversion jig (J-6090-052-A) has rubber feet, do not make a short circuit on the bottom surface of the connector conversion jig via peripheral conductive materials.

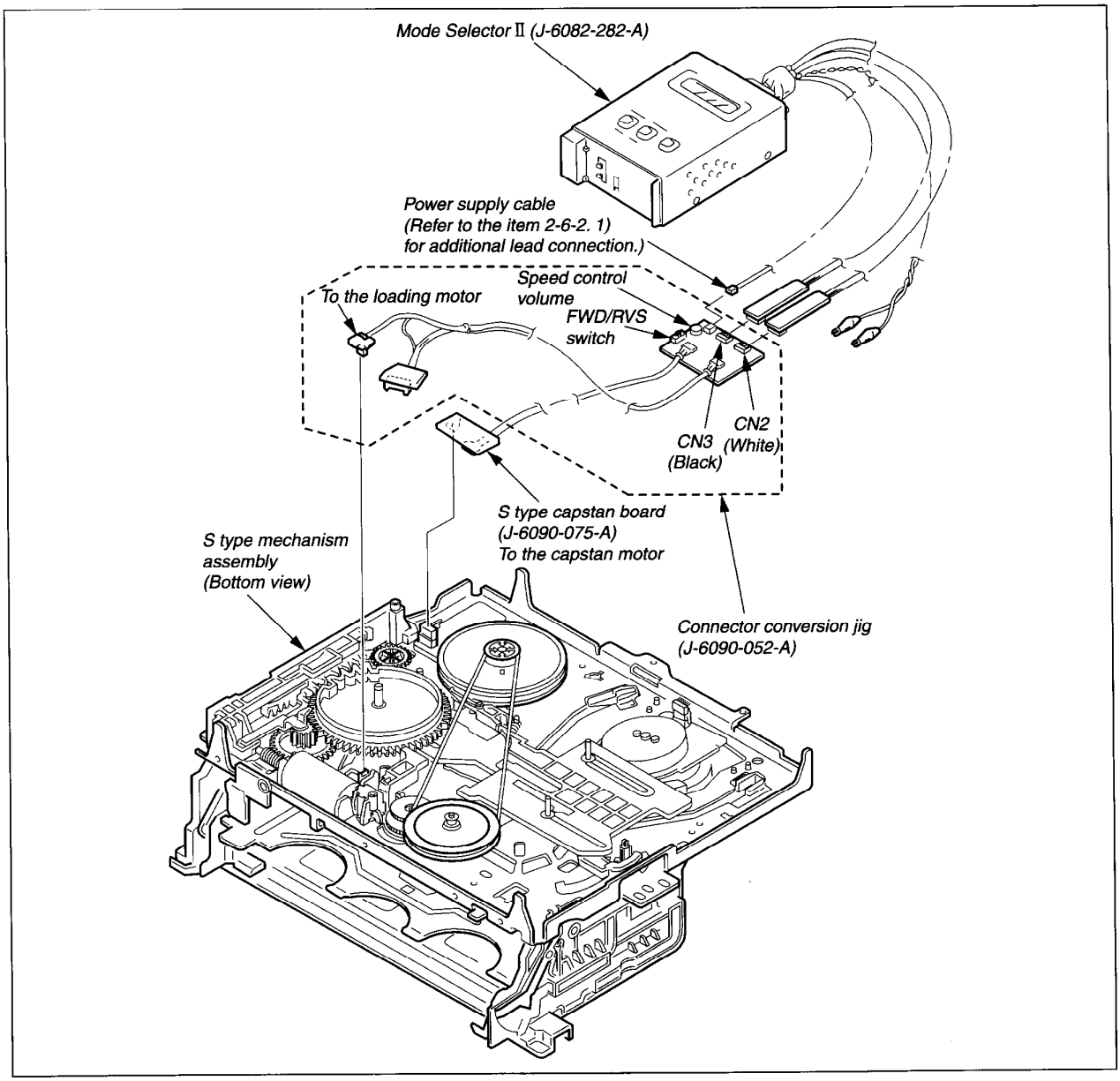


Fig. 2-3

2-6-6. CHECKING THE MECHANISM MODE BY THE MARK CARVED ON THE SLIDER

As shown in the right figure, the mechanism mode can be identified by checking the mark carved on the slider pointed by the loading gear shaft.

Carved mark	Mode
CD	Cassette down
EJ	Eject
UL	Unload end
LE	Load end
RV	Reverse
PR	Pinch release
FP	FWD pause
FW	FWD
ST	Stop
FR	FF/REW

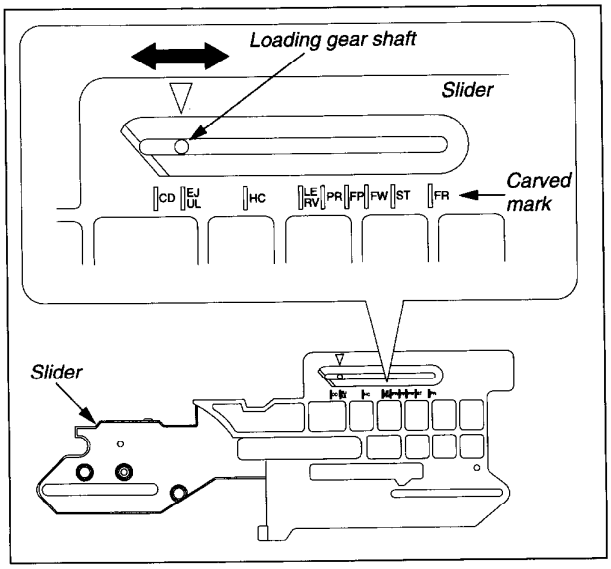


Fig. 2-4

2-7. PHASE ADJUSTMENT ON ATTACHING S TYPE MECHANISM ASSEMBLY

As shown below, adjust the phase between the rotary switch on the MA board and the cam gear.

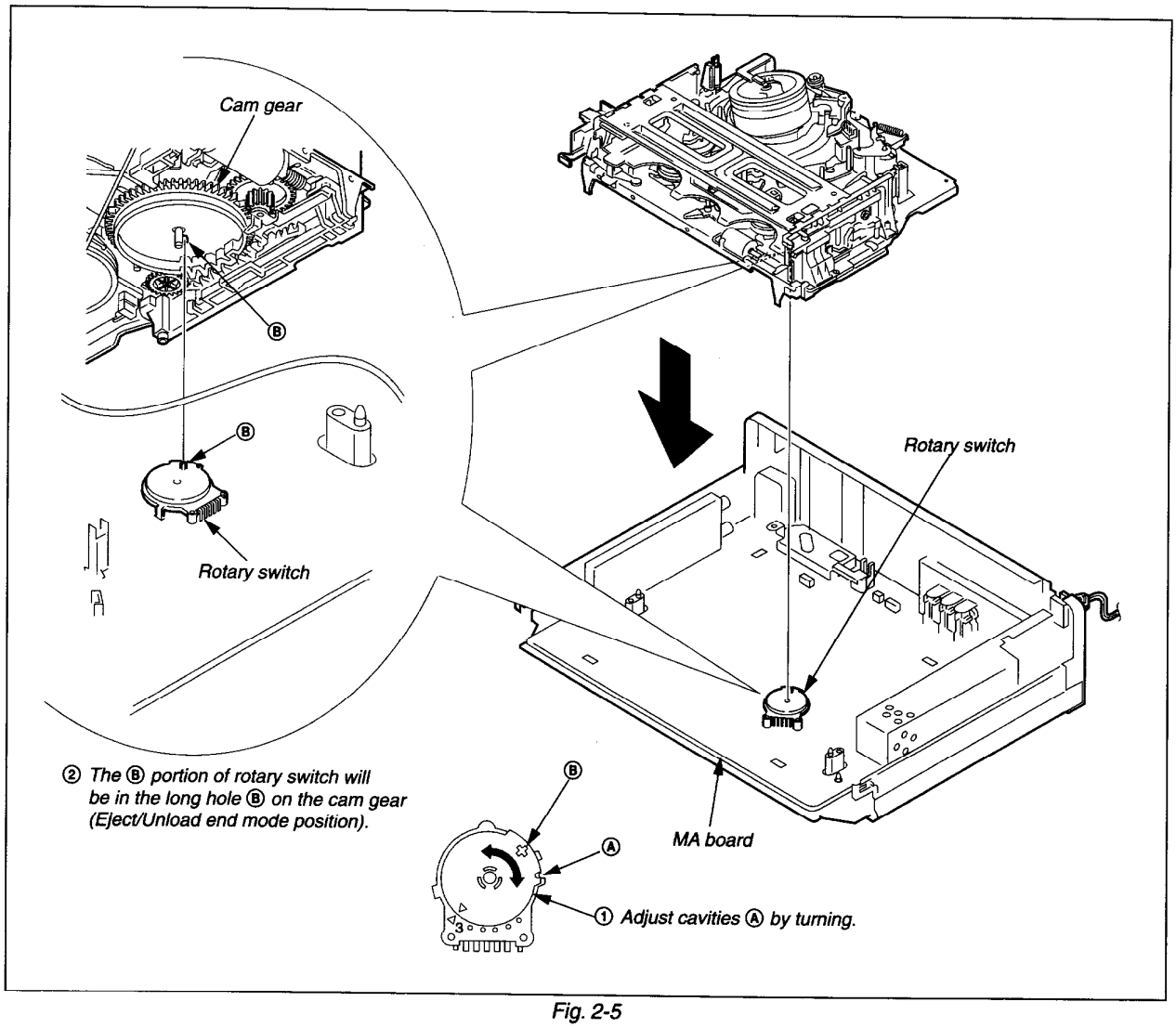

Cam gear
Ⓑ
Ⓑ
Rotary switch
Rotary switch
② The Ⓑ portion of rotary switch will be in the long hole Ⓑ on the cam gear (Eject/Unload end mode position).
Ⓑ
Ⓐ
① Adjust cavities Ⓐ by turning.
MA board

Fig. 2-5

3. MAINLY MECHANICAL PARTS REPLACEMENT

Notes:

For the removal of cabinets, printed circuit boards or the like, please refer to the "DISASSEMBLY" section on the service manual of the respective models.

To assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.

When replacing greased parts, grease them in the same way.

Do not oil, grease or touch with bare hands the surfaces that contacts tape of guides and brake shocs.

Install gears to engage each other.

Basically, disassembling and assembling should be done in the unthreading-end condition.

3-1. FL COMPLETE ASSEMBLY

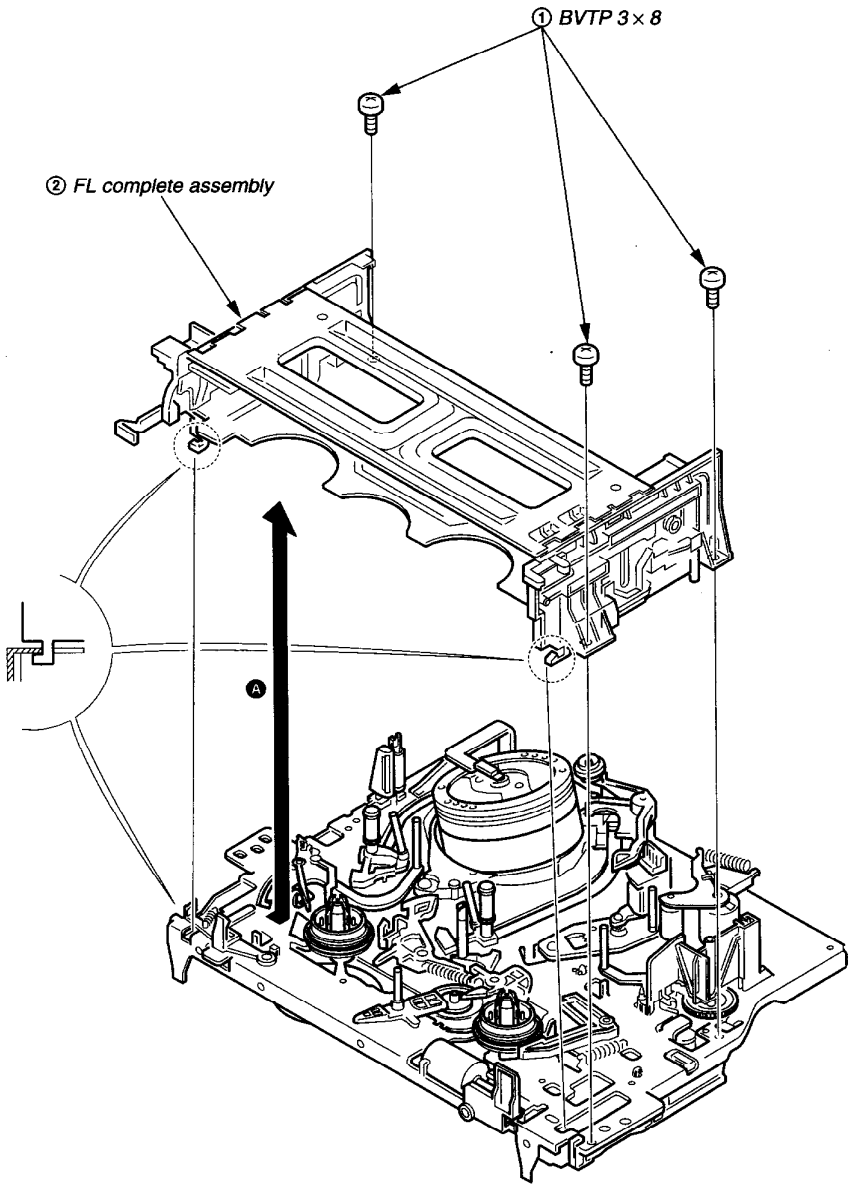
1) Remove screws (BVTP3 × 8) ①.
2) Remove FL complete assembly ② in the arrow Ⓐ direction.

Note : Be careful not to damage claws on the bottom and front.

3) Remove torsion spring (deck open) ③.
4) Remove luminous plate (top sensor) ④ and luminous plate (end sensor) ⑤.

[Note on Mounting]

- When mounting FL complete assembly, first insert claws on the bottom and front not to damage.
- Keep clean top sensor and end sensor luminous plates.



Screw tightening torque
① : 0.7845 ± 0.0784N•m (8.0 ± 0.8kg•cm)

Fig. 3-1

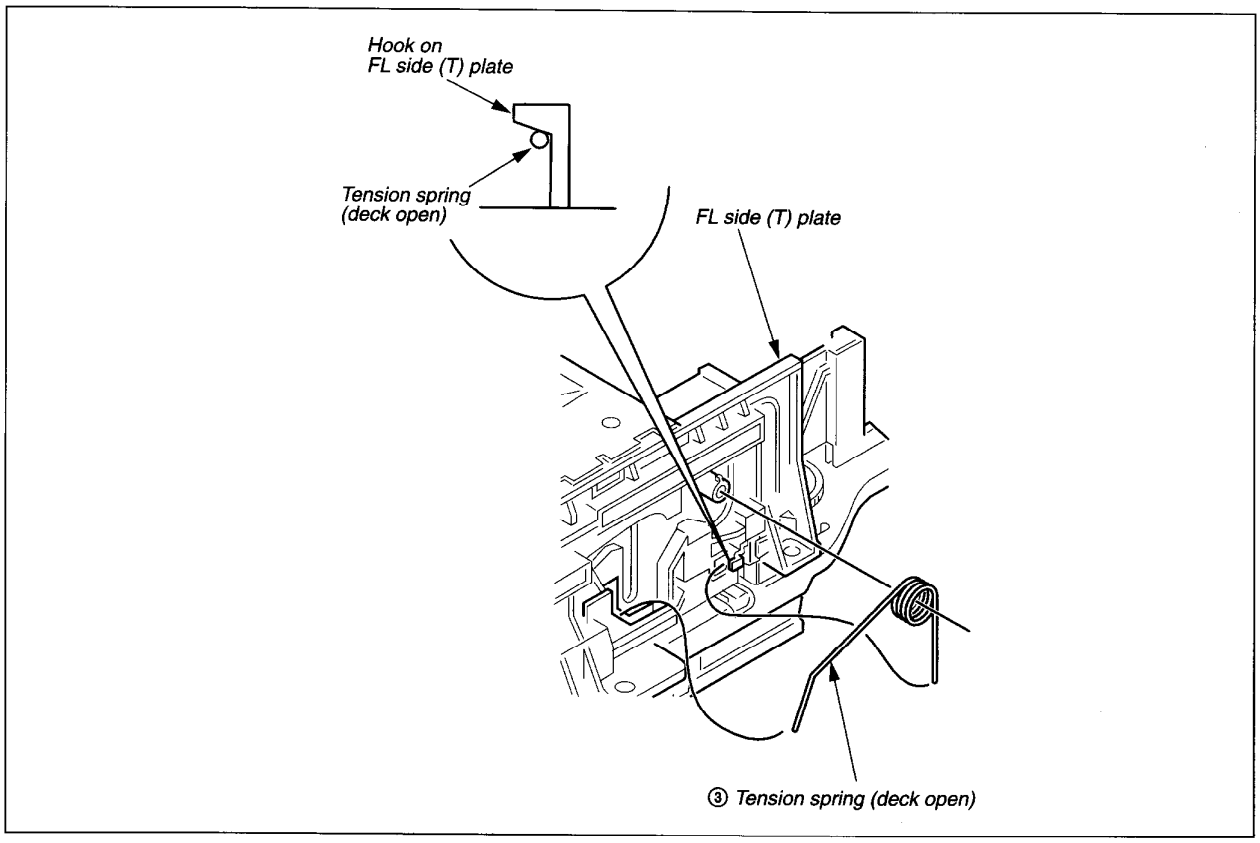

Hook on
FL side (T) plate
Tension spring
(deck open)
FL side (T) plate
③ Tension spring (deck open)

Fig. 3-2

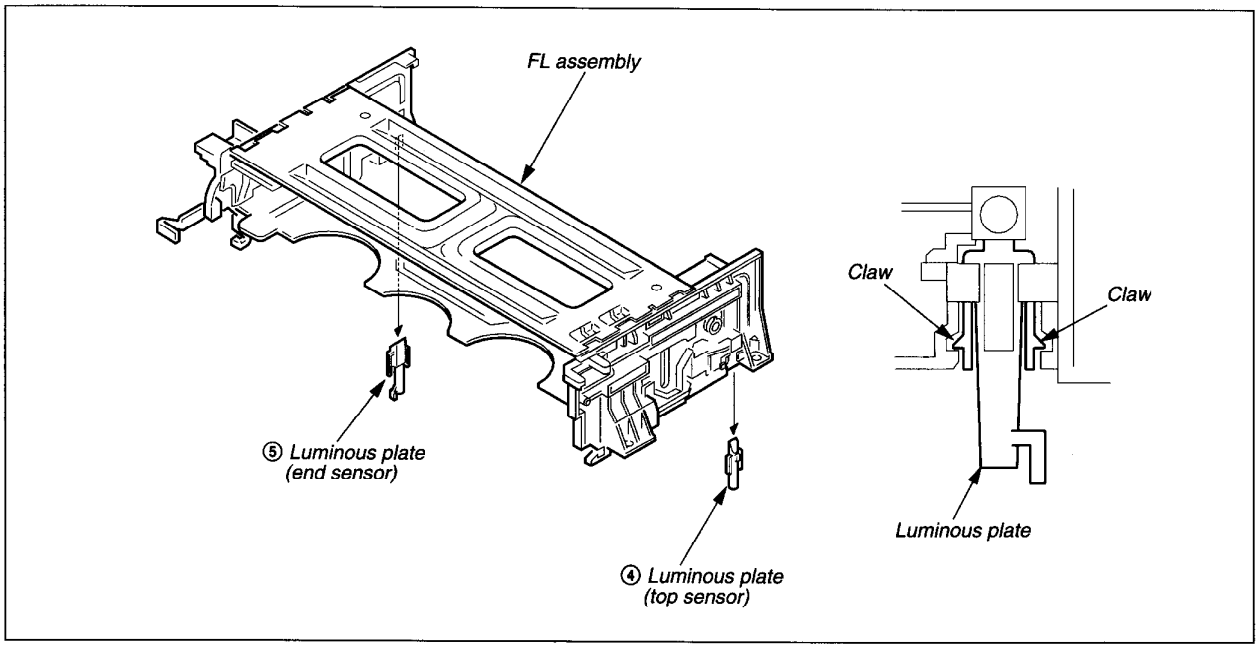

FL assembly
⑤ Luminous plate
(end sensor)
④ Luminous plate
(top sensor)
Claw
Claw
Luminous plate

Fig. 3-3

3-2. DRUM ASSEMBLY

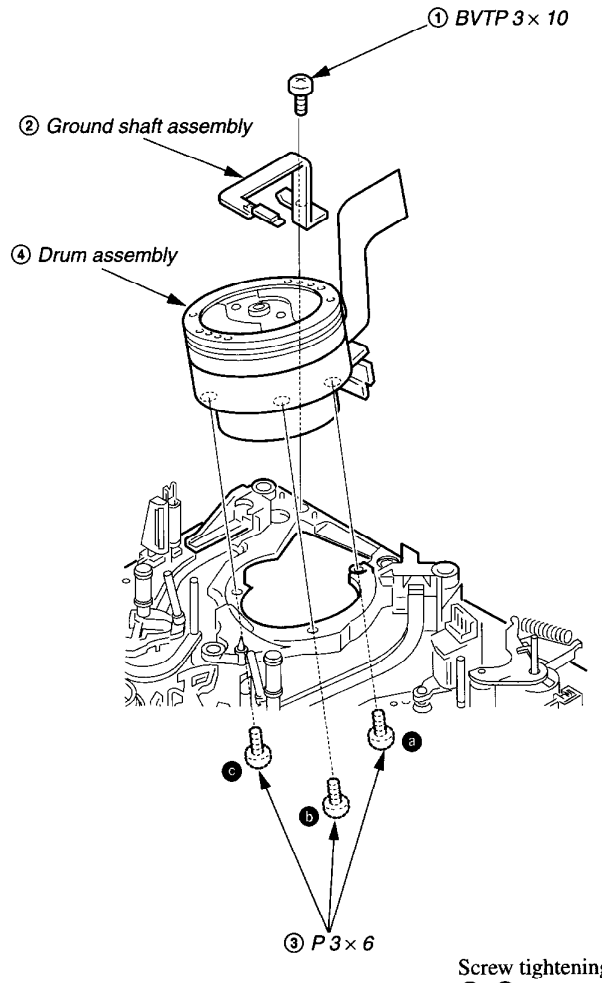
1) Remove screw (BVTP3 × 8) ①.
2) Remove ground shaft assembly ② not to touch its tip with bare hand.
3) Remove screws ③ to remove drum assembly ④.

[Notes on Mounting]

- Don't touch head chips and tip of ground shaft assembly with bare hand.
- Keep clean the surface that contacts tape of drum assembly.
- Tighten screw ③ in the order ⓐ, ⓑ, ⓒ.

[Adjusting after Mounting]

- 4-1. Tape path adjustment



Screw tightening torque
①, ③ : 0.4413 ± 0.0490N•m (4.5 ± 0.5kg•cm)

Fig. 3-4

3-3. PINCH PRESS BLOCK ASSEMBLY, TG8 ASSEMBLY AND THEIR PERIPHERY

1) Remove pinch press block assembly ① while releasing its tip from the claw of lid opener ②.
2) Remove lid opener ② while releasing claw in the arrow Ⓐ direction from mechanical chassis.
3) Remove elevator gear ③.
4) Remove TG8 assembly ④, TG8 arm gear ⑤ and TG8 arm driving gear ⑥.
5) Then remove pinch pressing gear ⑦.

[Notes on Mounting]

- When attaching pinch pressing gear ⑦ and elevator gear ③, be sure to adjust their phases as shown in Fig. A.
- Apply grease to elevator gear ⑦ and pinch shaft as shown in Fig. B.
- Don't touch surface of pinch roller with bare hand.

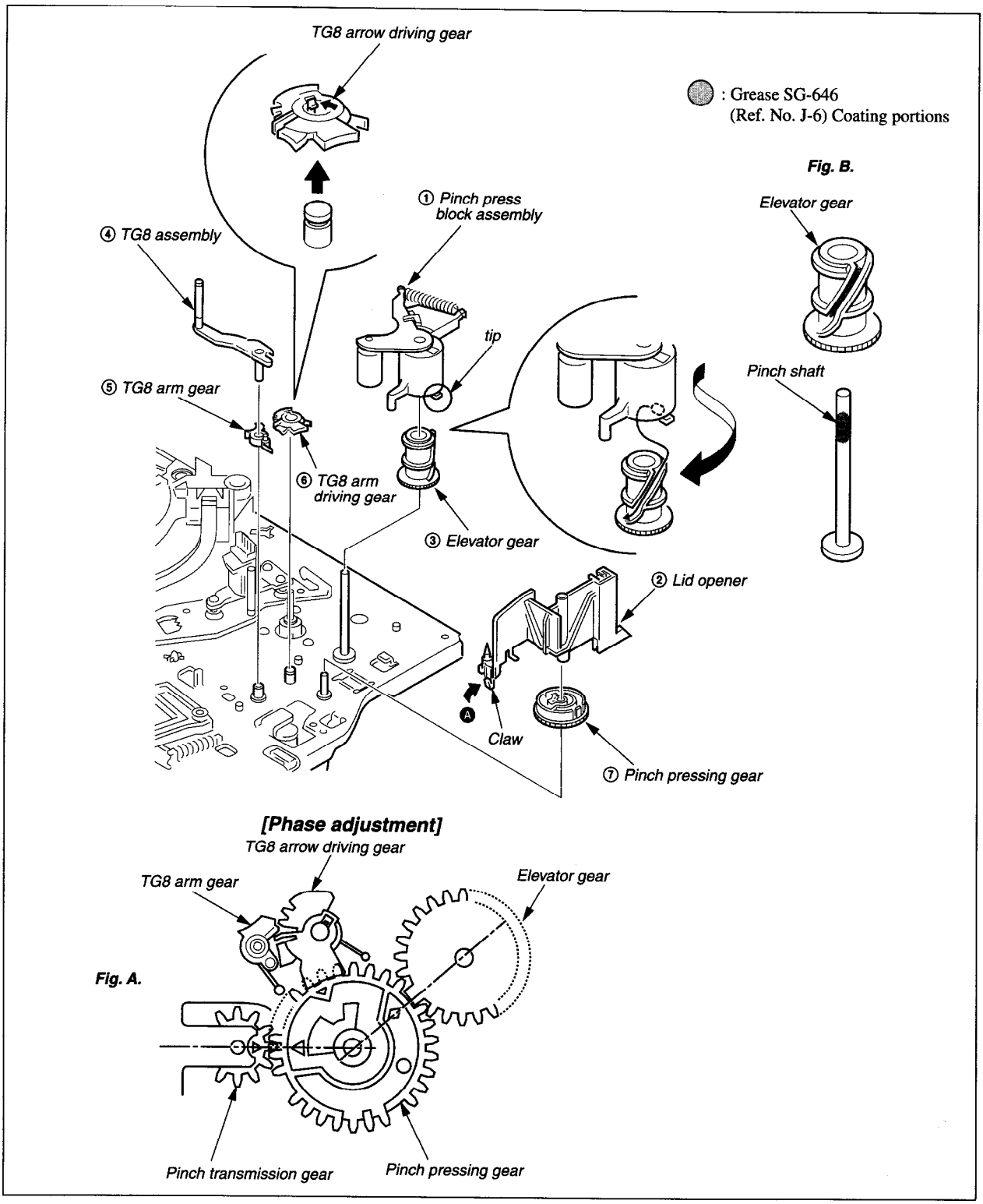


Fig. 3-5

3-4. RUBBER BELT, CAPSTAN MOTOR

1) Remove rubber belt ①.
2) Remove screws ② to pull out capstan motor ③.

[Notes on Mounting]

- Attach rubber belt not to twist it.
- Don't touch capstan motor with bare hand to keep clean capstan motor.
- Tighten screws ② in the order ⓐ, ⓑ, ⓒ.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

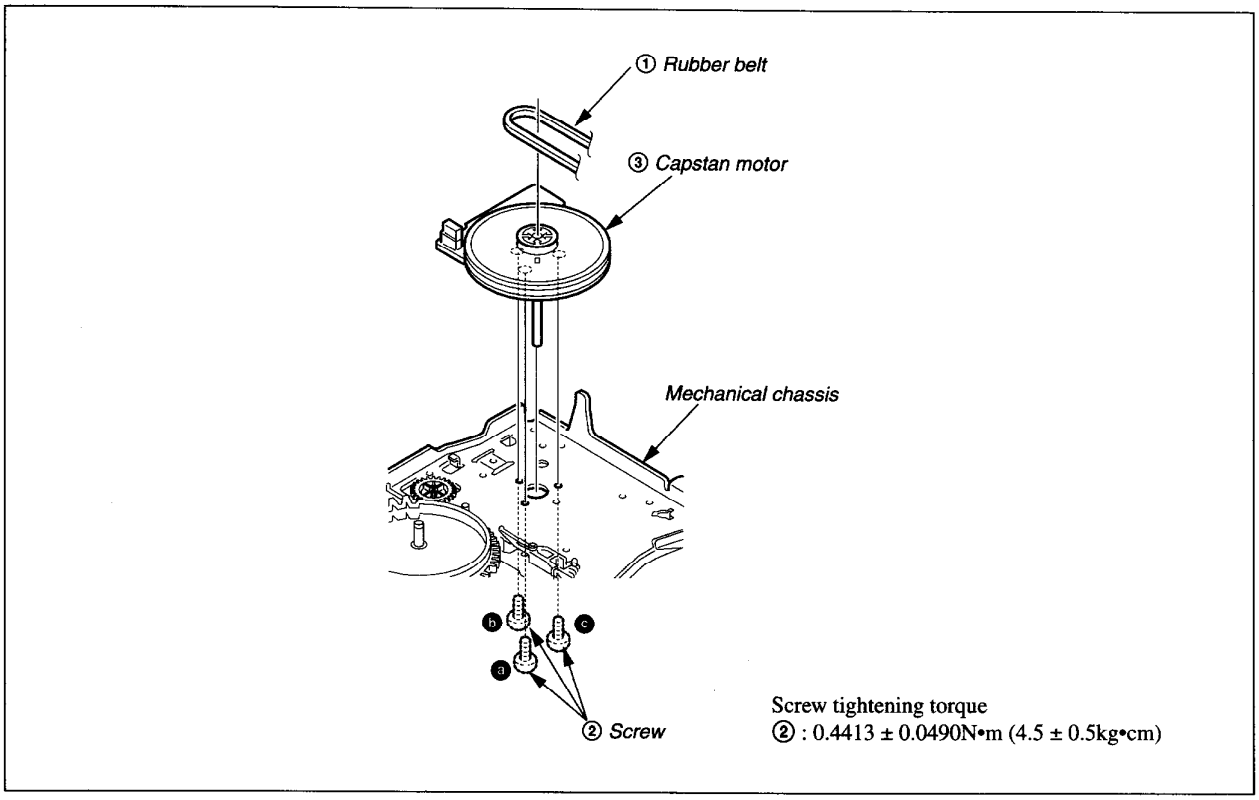


Fig. 3-6

3-5. ACE HEAD BLOCK ASSEMBLY

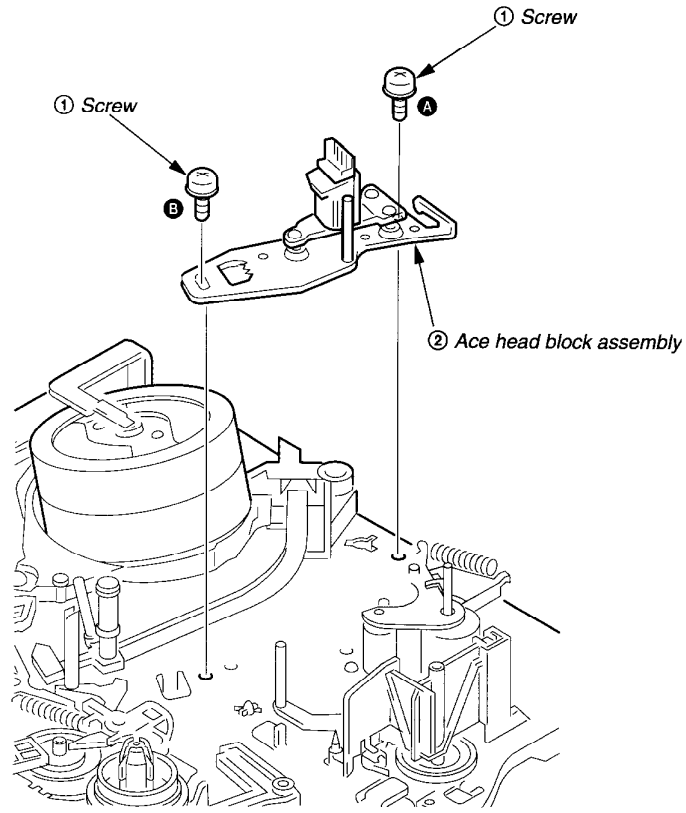
1) Remove screws ① to remove ACE head block assembly ②.

[Notes on Mounting]

- Don't touch capstan motor with bare hand to keep clean capstan motor.
- On tightening screws ①, first, tighten in the order Ⓐ, Ⓑ, next loosen Ⓑ 180 degrees or more and perform adjustments. After adjustments tighten with torque screwdriver (torque; 0.29 ± 0.29 N•m (3.0 ± 0.3kg•cm)).

[Adjustment after Mounting]

- 4-1. Tape path adjustment.



Screw tightening torque
① : 0.7845 ± 0.0784N•m (8.0 ± 0.8kg•cm)

Fig. 3-7

3-6. FEH ASSEMBLY

1) While putting the boss out from mechanical chassis, turn FEH assembly ① in the arrow Ⓐ direction and pull out FEH assembly above.
2) Slide FE head ② out from FEH holder not to break claw (Recorder only).
3) Remove TG2 shaft ③ by pushing with a screwdriver covered with cloth or the like not to scratch the surface.

[Note on Mounting]
• Don't touch FE head and TG2 shaft with bare hand.

[Adjustment after Mounting]
• 4-1. Tape path adjustment.

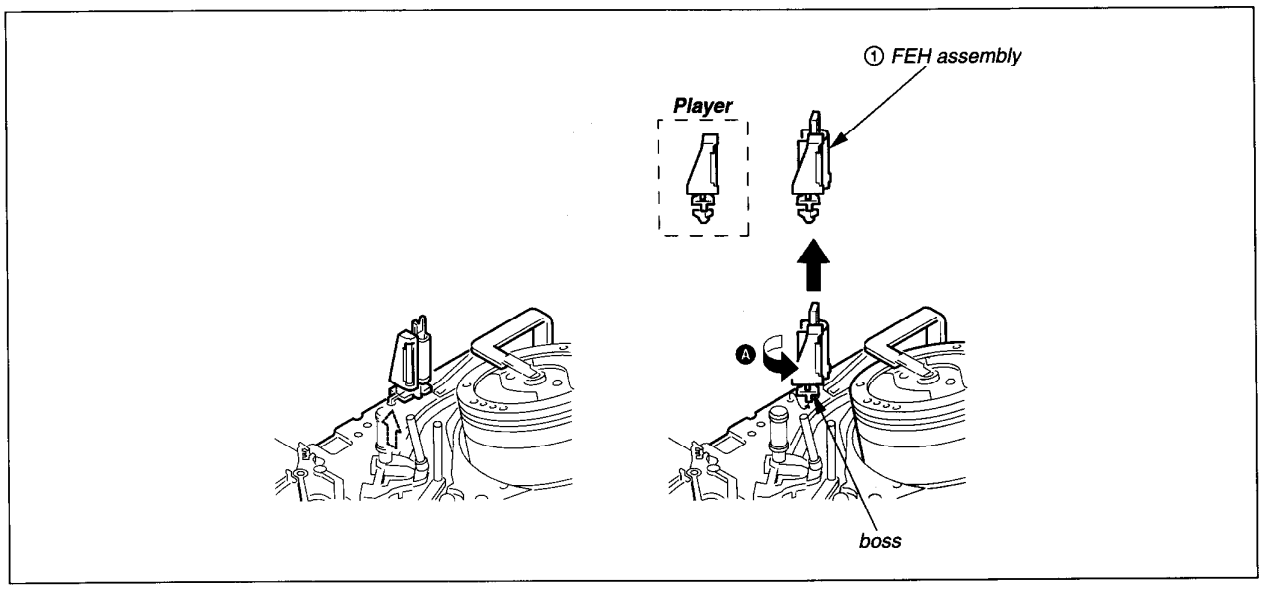


Fig. 3-8

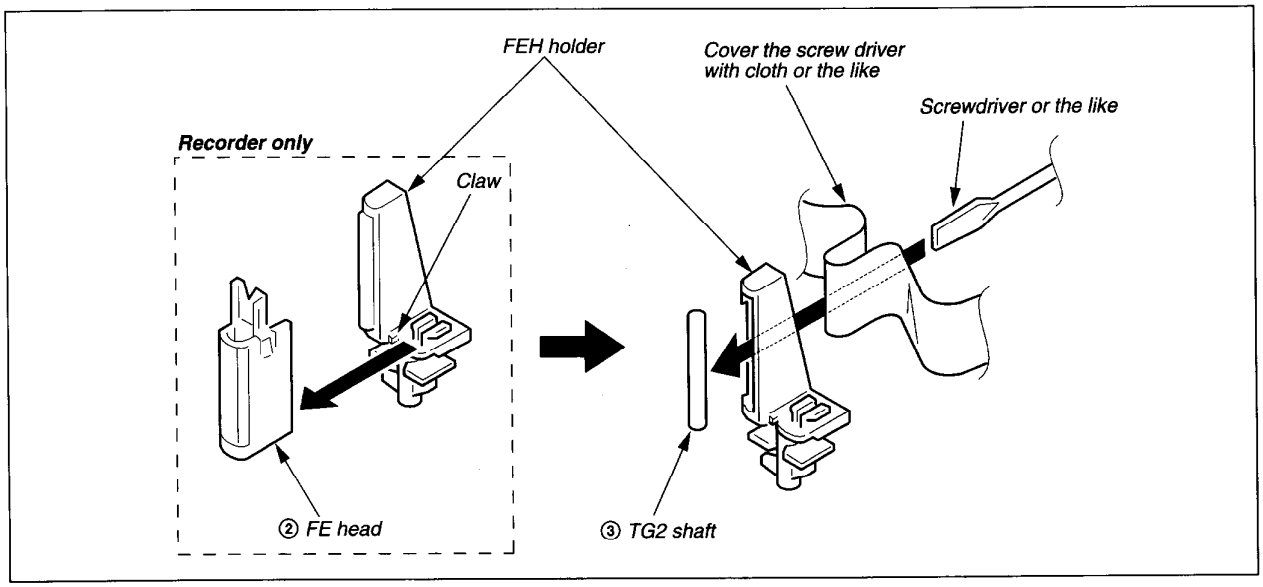


Fig. 3-9

3-7. REC PROOF LEVER

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove tension spring (REC proof) ①.
3) Remove REC proof lever ② in the arrow Ⓑ by pushing claw in the arrow Ⓐ direction.

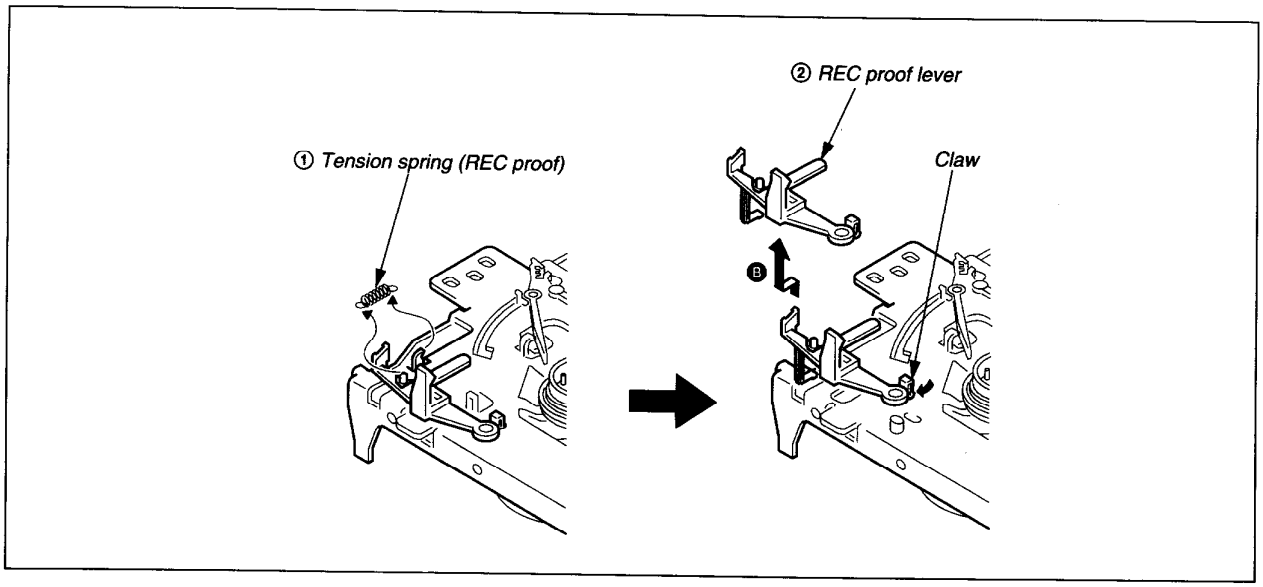


Fig. 3-10

3-8. RVS BRAKE ARM ASSEMBLY

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove extension spring (RVS brake) ①.
3) Turn RVS brake arm assembly ② in the arrow Ⓐ direction and remove it in the arrow Ⓑ.

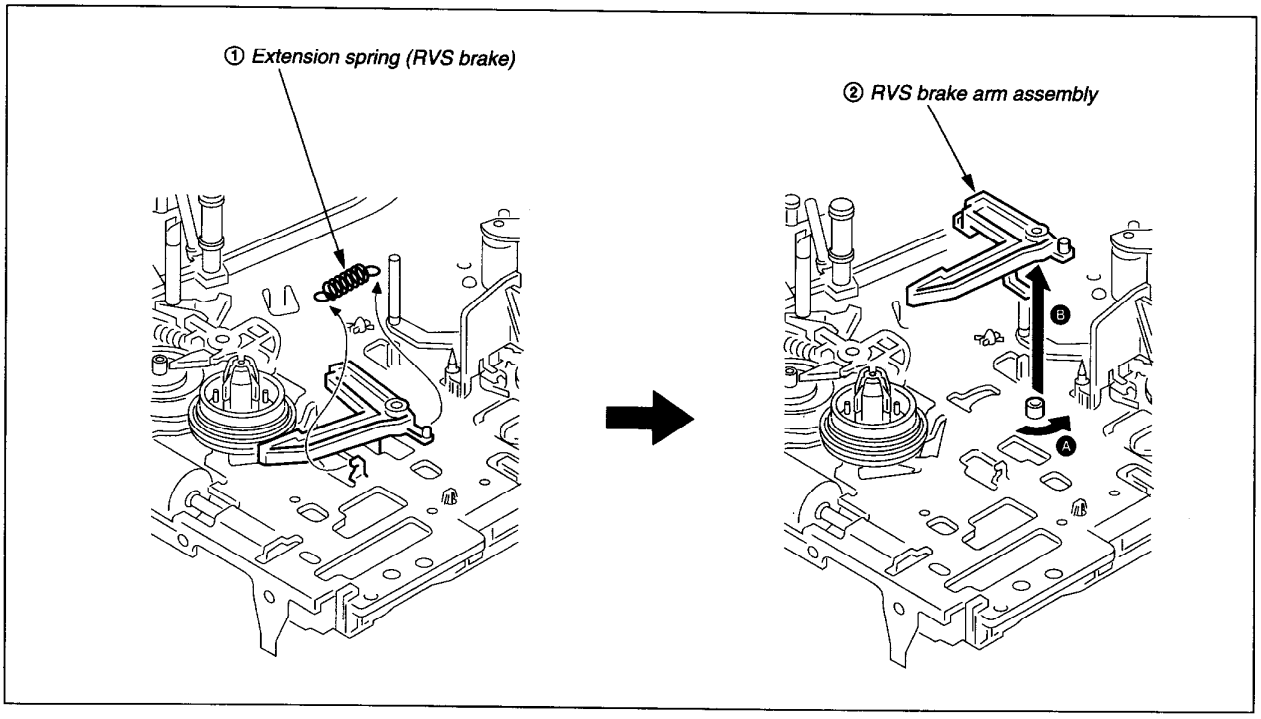


Fig. 3-11

3-9. MAIN (S) AND MAIN (T) BRAKE ASSEMBLIES

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove extension spring (main brake) ①.
3) Turn main (S) brake assembly ② in the arrow Ⓐ direction and remove it in the arrow Ⓑ.
4) Turn main (T) brake assembly ③ in the arrow Ⓒ direction and remove it in the arrow Ⓓ.

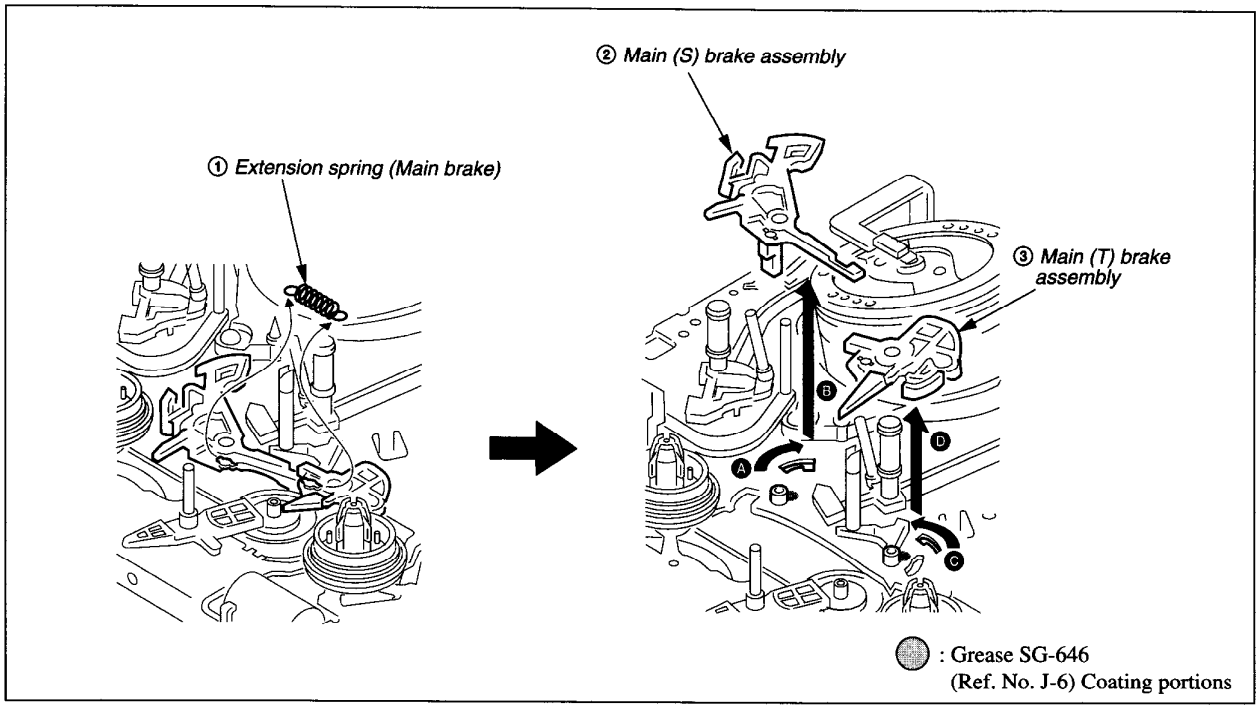


Fig. 3-12

3-10. REEL (T) TABLE (BLACK)

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove stopper washer ① to pull reel (T) table ② out.
3) Remove thrust washer ③.

[Note on Mounting]

• Before attaching, confirm the oil is applied at the top of reel (T) shaft.

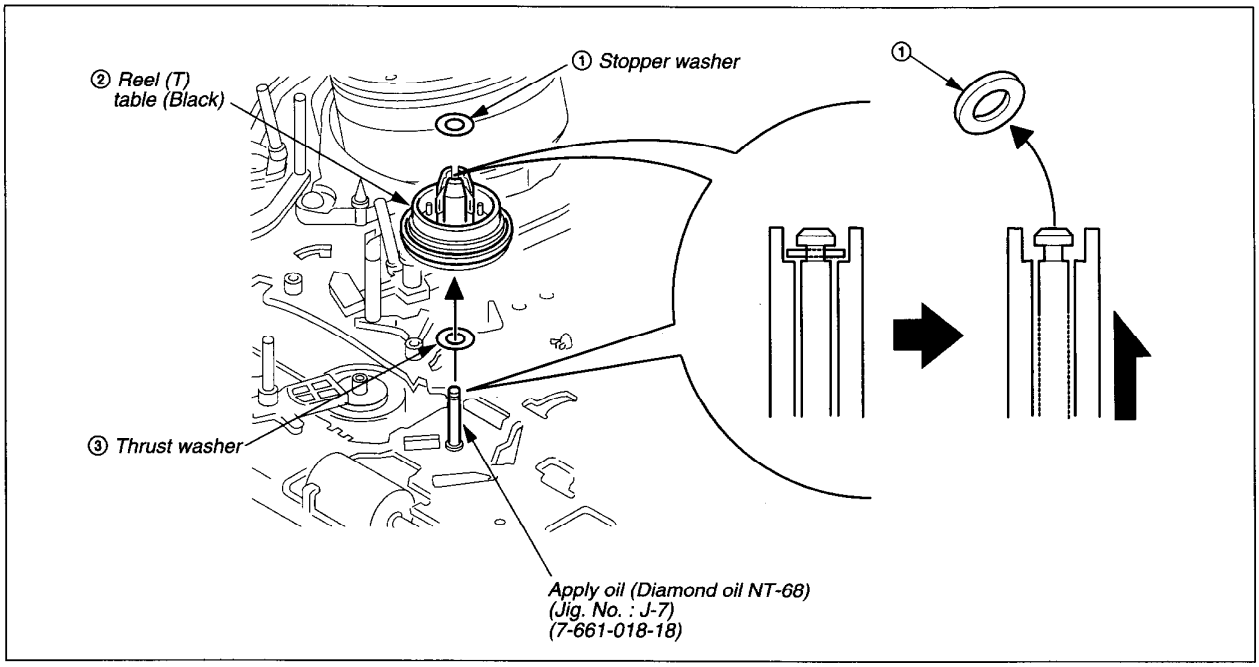


Fig. 3-13

3-11. PENDULUM ARM ASSEMBLY

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove main (S) and main (T) brake assemblies. (Refer to 3-9.)
3) While releasing claws from the pendulum arm shaft in the arrow A direction, pull out pendulum arm assembly ①.

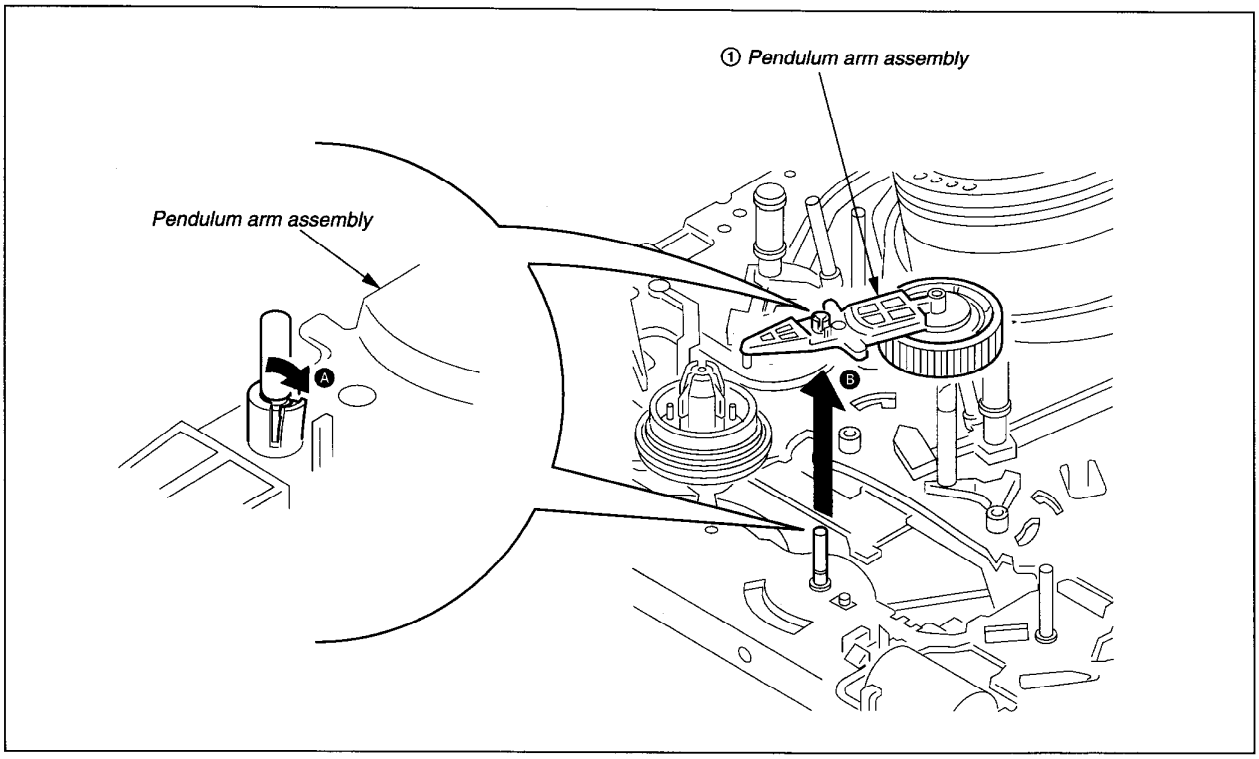


Fig. 3-14

3-12. FL SLIDER BLOCK ASSEMBLY

1) Remove FL complete assembly. (Refer to 3-1.)
2) Set the mechanism deck upside down.
3) Remove a screw (BVTP 3 × 8) ① and then retainer plate ② is getting out of place.
4) Slide FL slider block assembly ③ off in the arrow Ⓐ direction and raise it up.

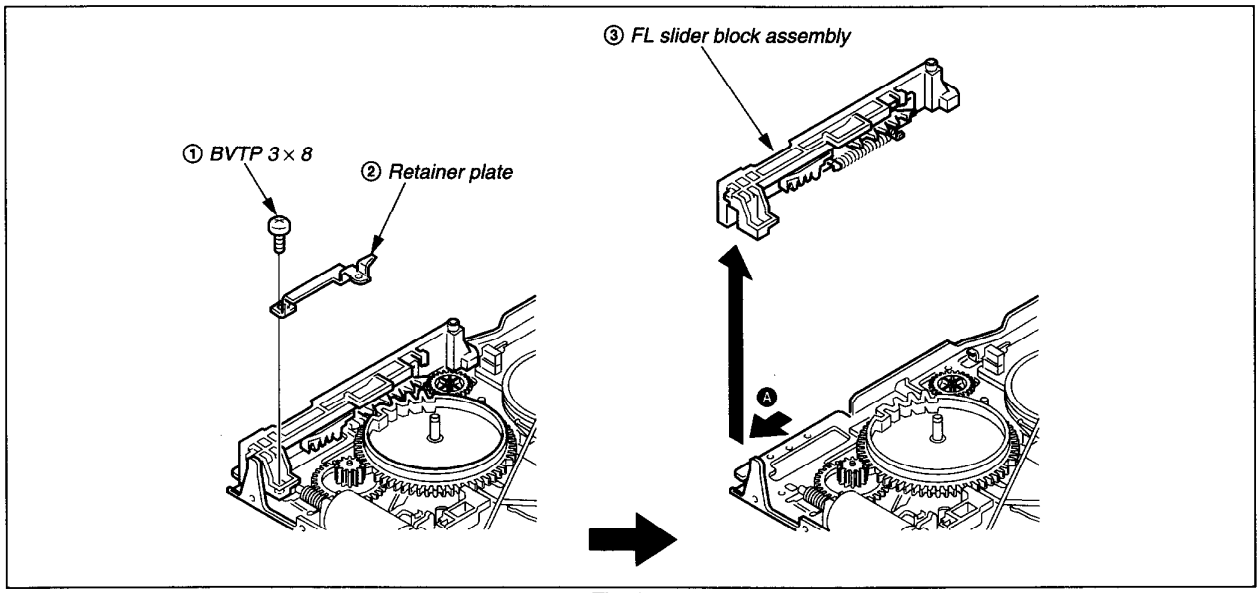


Fig. 3-15

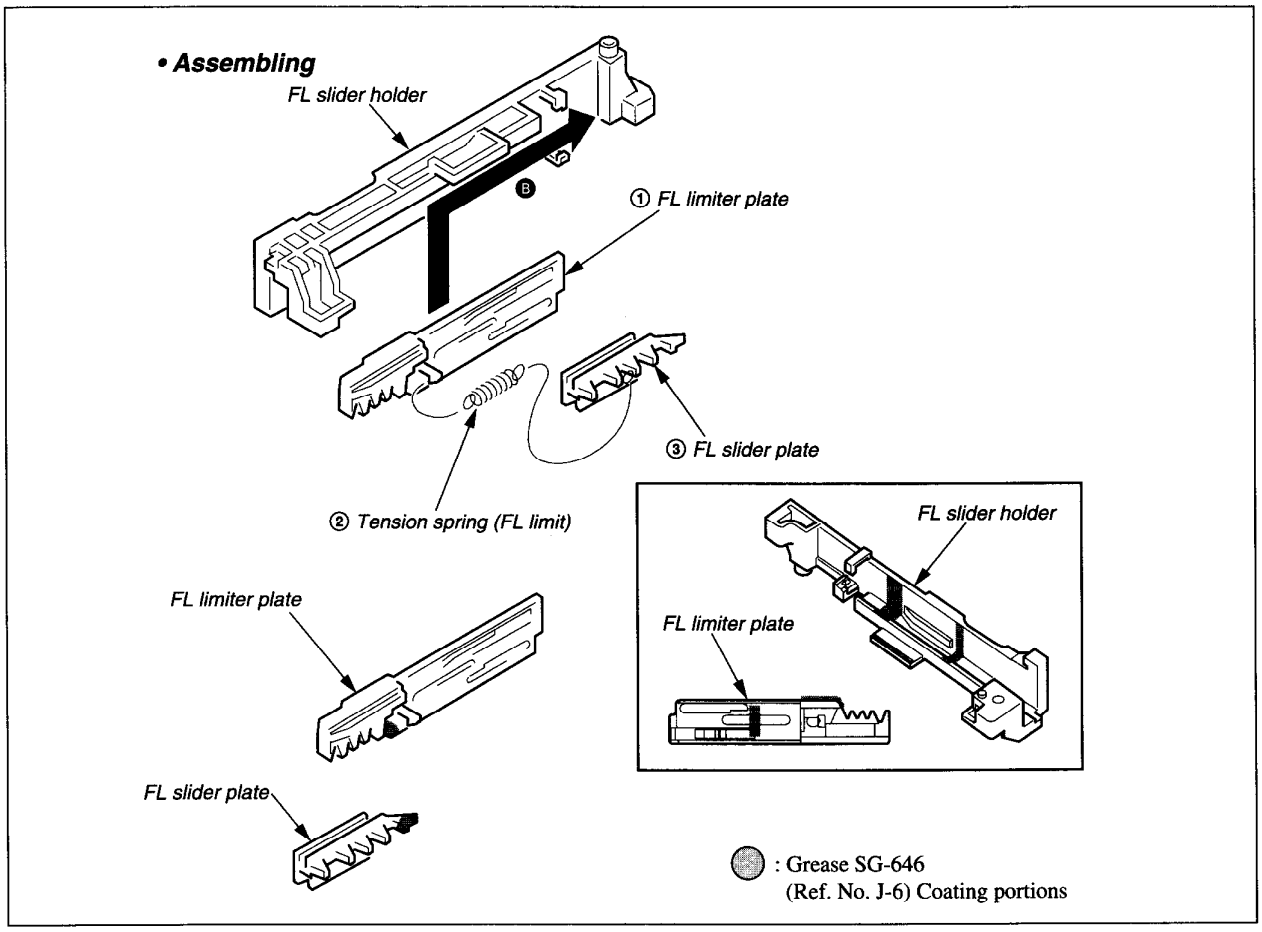


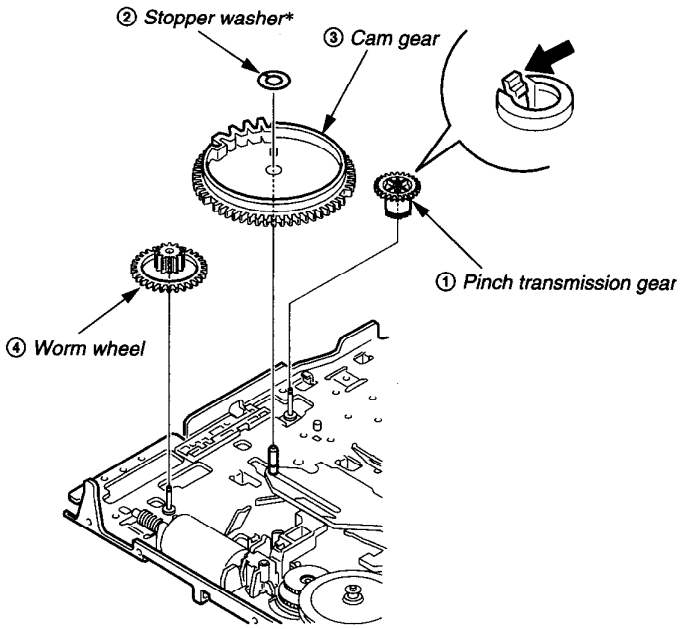
Fig. 3-16

3-13. PINCH TRANSMISSION GEAR, CAM GEAR, WORM WHEEL

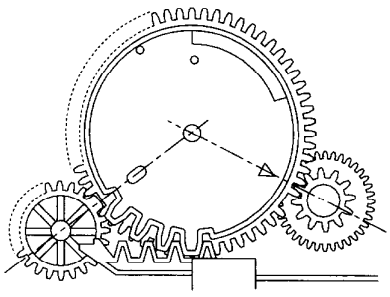
1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove FL slider block assembly. (Refer to 3-12.)
3) Remove pinch transmission gear ① by putting off its claw from shaft.
4) Remove stopper washer ②* to pull out cam gear ③.
5) Remove worm wheel ④ by putting off its claw from shaft.

[Note on Mounting]

- Before attaching cam gear ③, confirm that the specified locations are coated with grease SG-646 (Ref. No. J-6).
- Adjust the phase of gears each other.



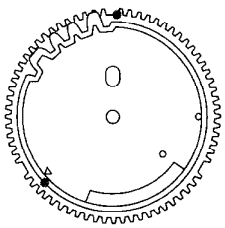
• Phase adjustment



: Grease SG-646 (Ref. No. J-6) Coating portions

*Once remove stopper washer ②, don't use it again. Replace it with new one.

[Top]



[Bottom]

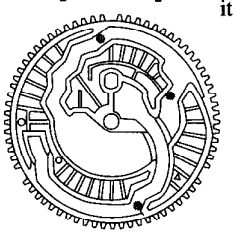


Fig. 3-17

3-14. CAPSTAN BRAKE ASSEMBLY, CAPSTAN BRAKE SHAFT

1) Remove rubber belt. (Refer to 3-4.)
2) Remove cap brake spring ①.
3) Remove capstan brake assembly ② by putting off claw of capstan brake shaft ③.
4) Set the mechanical chassis bottom side down.
5) While pushing the boss of capstan brake shaft ③, turn it clockwise to remove it.

[Note on Mounting]

• Don't touch shoe of capstan brake assembly with bare hand.

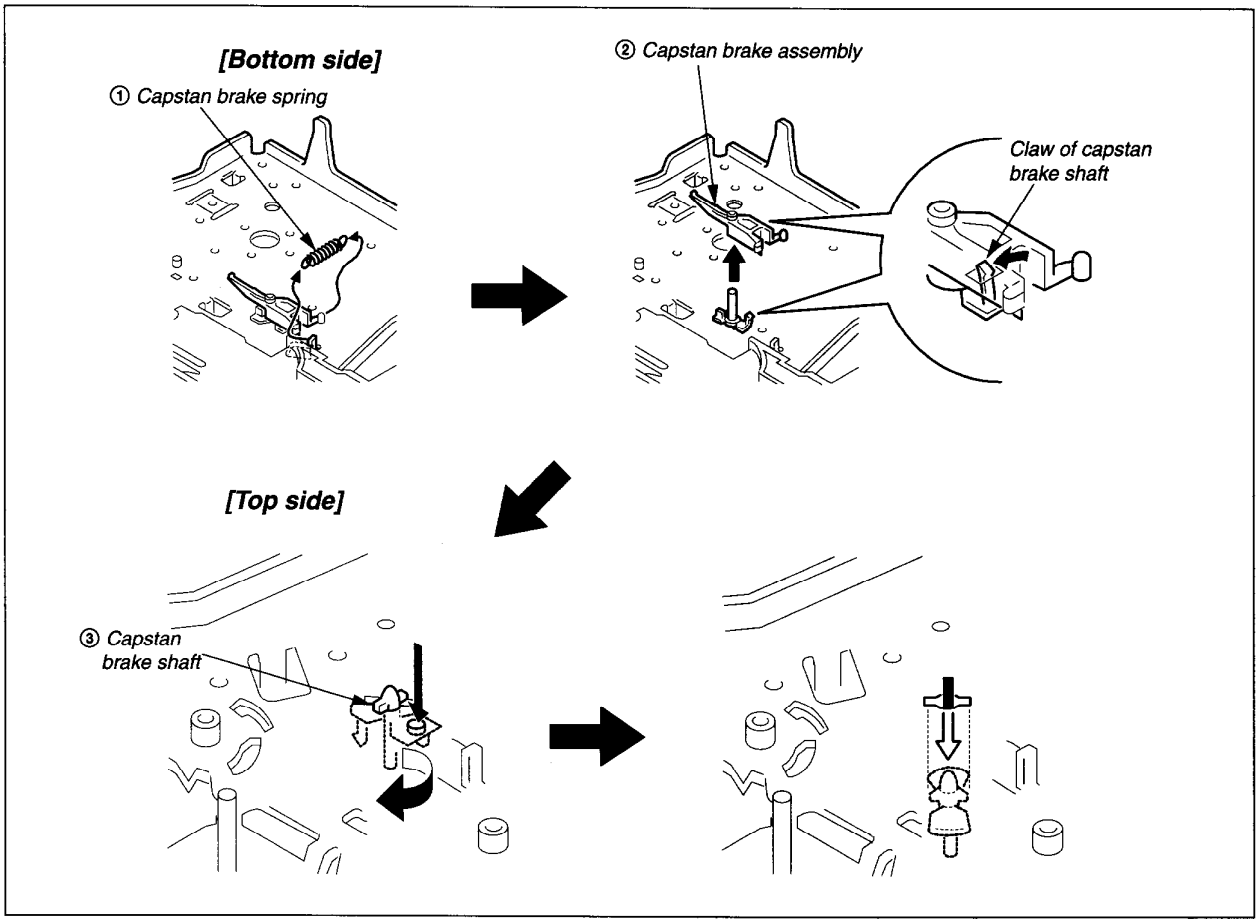


Fig. 3-18

3-15. FL SLIDER GUIDE

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove FL slider block assembly. (Refer to 3-12.)
3) Remove FL slider guide ① while pushing claws in the arrow Ⓐ direction.

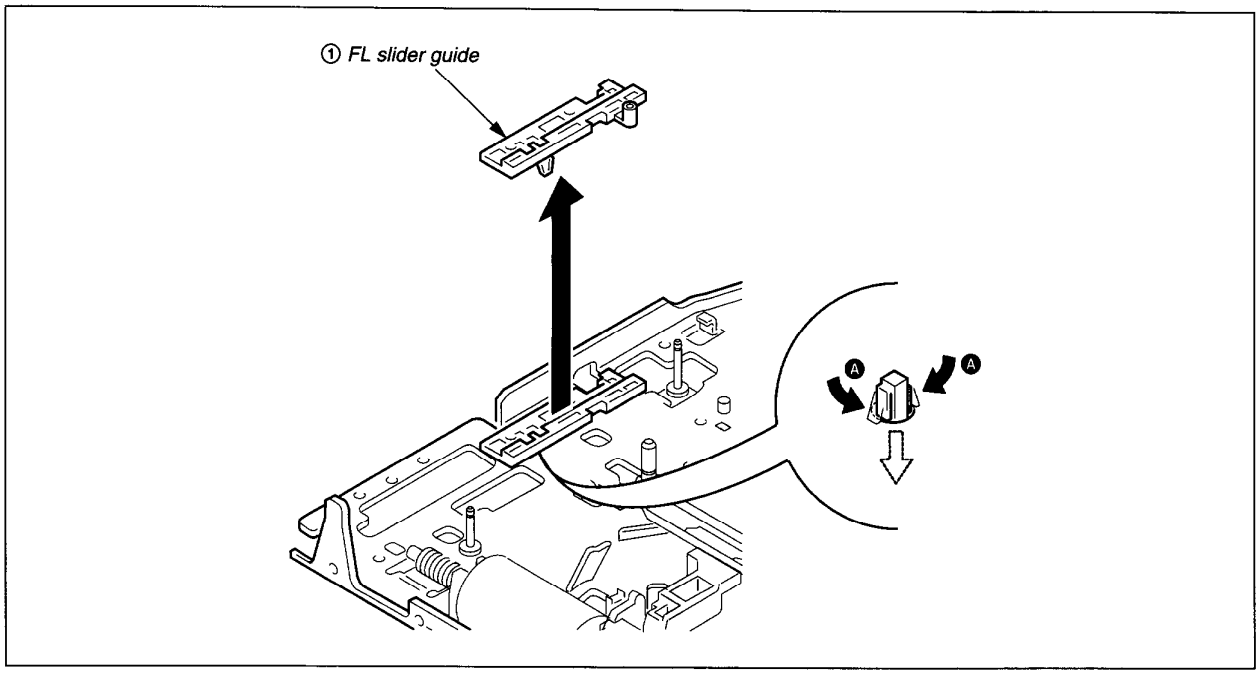


Fig. 3-19

3-16. SLIDER

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove rubber belt. (Refer to 3-4.)
3) Remove FL slider block assembly. (Refer to 3-12.)
4) Remove cam gear. (Refer to 3-13.)
5) Remove stopper washers ① and remove slider ② in the arrow direction.

[Note on Mounting]

- Before attaching slider ②, confirm the specified locations are coated with grease SG-646 (Ref. No. J-6).
- When attaching slider ②, adjust "Δ" mark on slider to loading gear (T) shaft as shown in Fig. A.

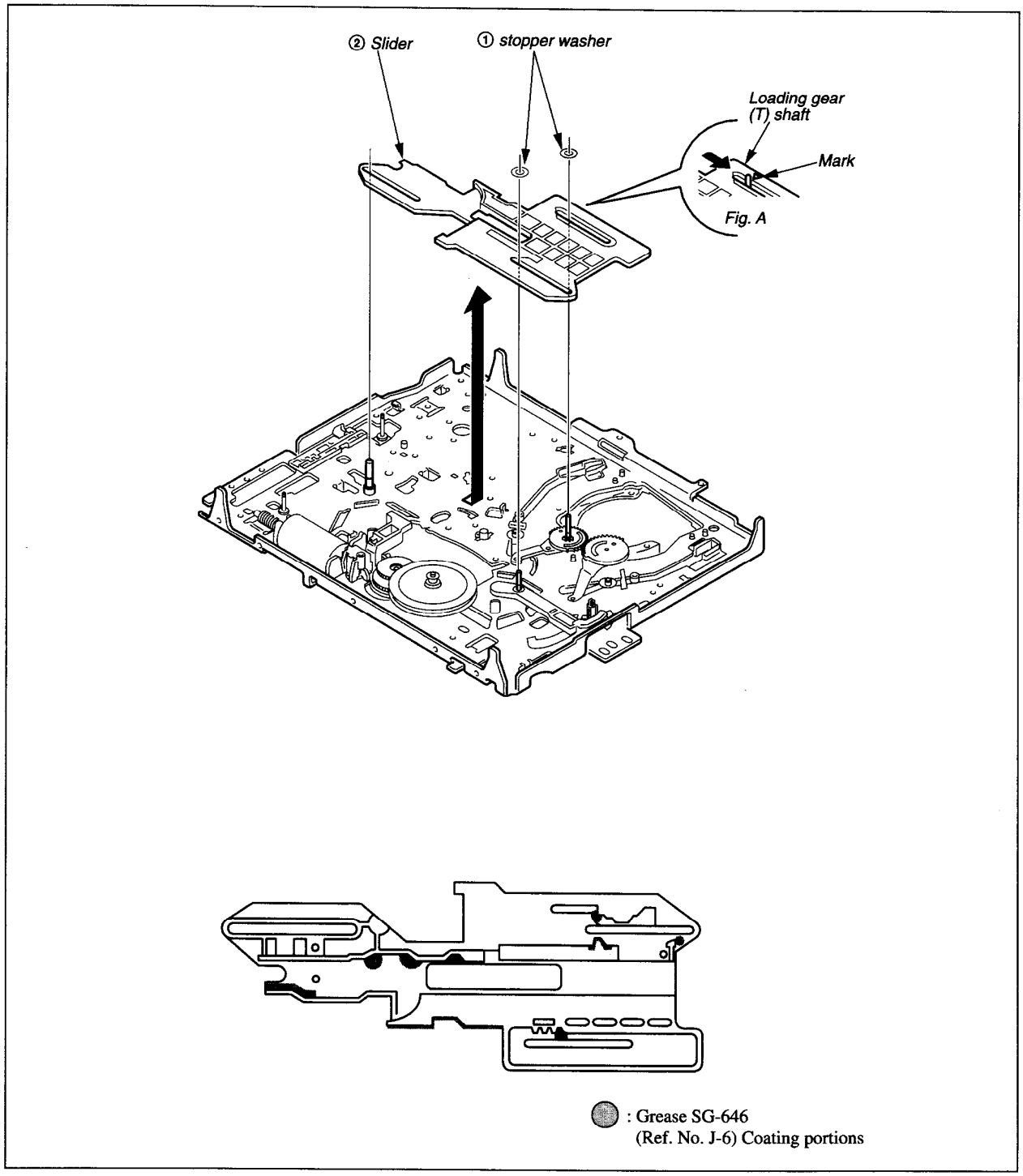


Fig. 3-20

3-17. TG1 DRIVING ARM

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove rubber belt. (Refer to 3-4.)
3) Remove FL slider block assembly. (Refer to 3-12.)
4) Remove cam gear. (Refer to 3-13.)
5) Remove slider. (Refer to 3-16.)
6) Remove spring (power tension) ① from TG1 driving arm ②.
7) Remove TG1 driving arm ② by turning it in the arrow Ⓐ to Ⓑ direction.

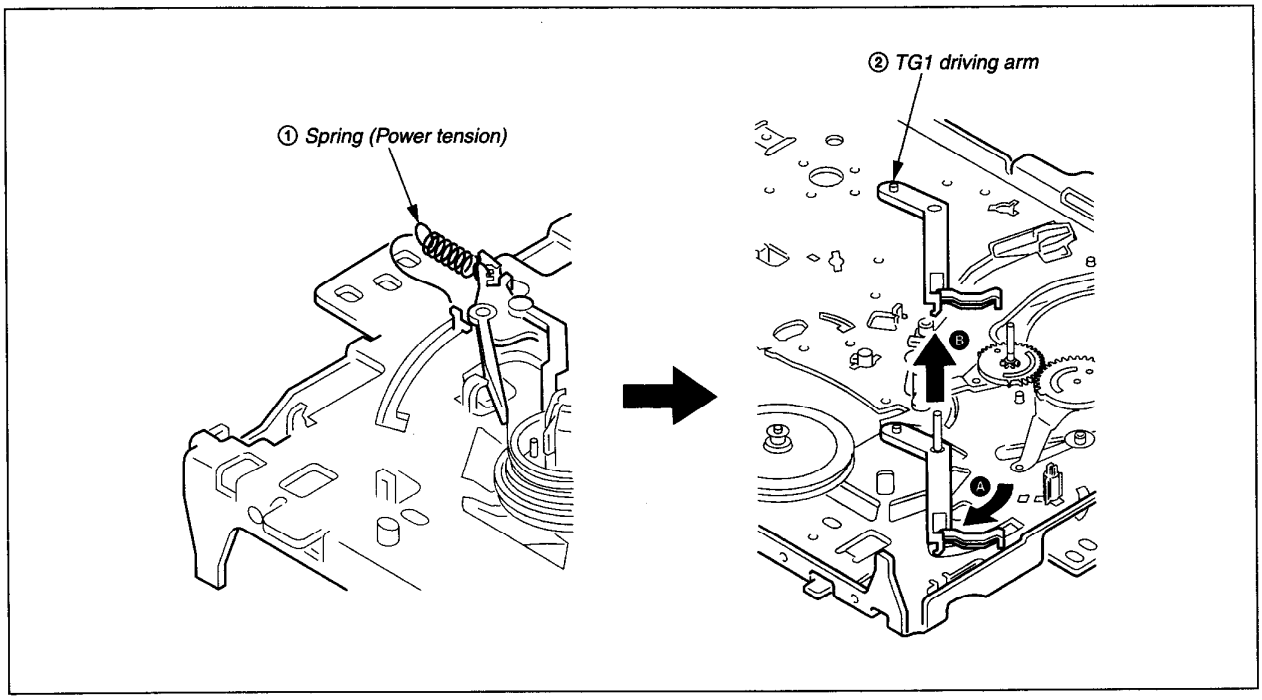


Fig. 3-21

3-18. LOADING (T) AND LOADING (S) GEAR ASSEMBLIES

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove rubber belt. (Refer to 3-4.)
3) Remove FL slider block assembly. (Refer to 3-12.)
4) Remove cam gear. (Refer to 3-13.)
5) Remove slider. (Refer to 3-16.)
6) Remove loading (T) gear assembly ① and loading (S) gear assembly ② in the arrow direction.

[Note on Mounting]

• When attaching them, be sure to adjust the phase each other.

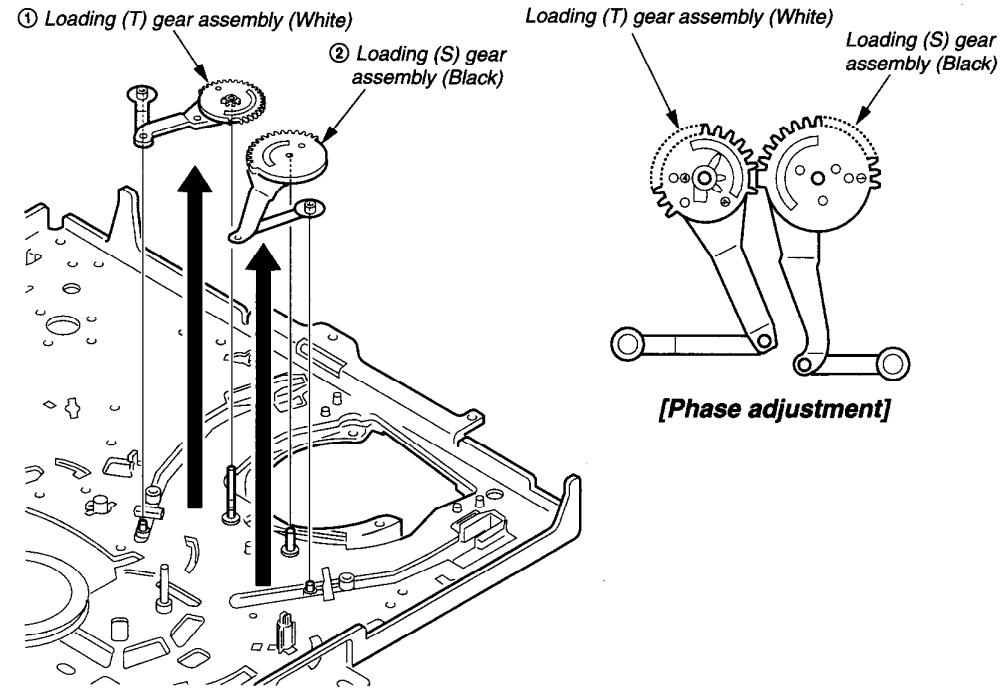

① Loading (T) gear assembly (White)
② Loading (S) gear assembly (Black)
Loading (T) gear assembly (White)
Loading (S) gear assembly (Black)
[Phase adjustment]

Fig. 3-22

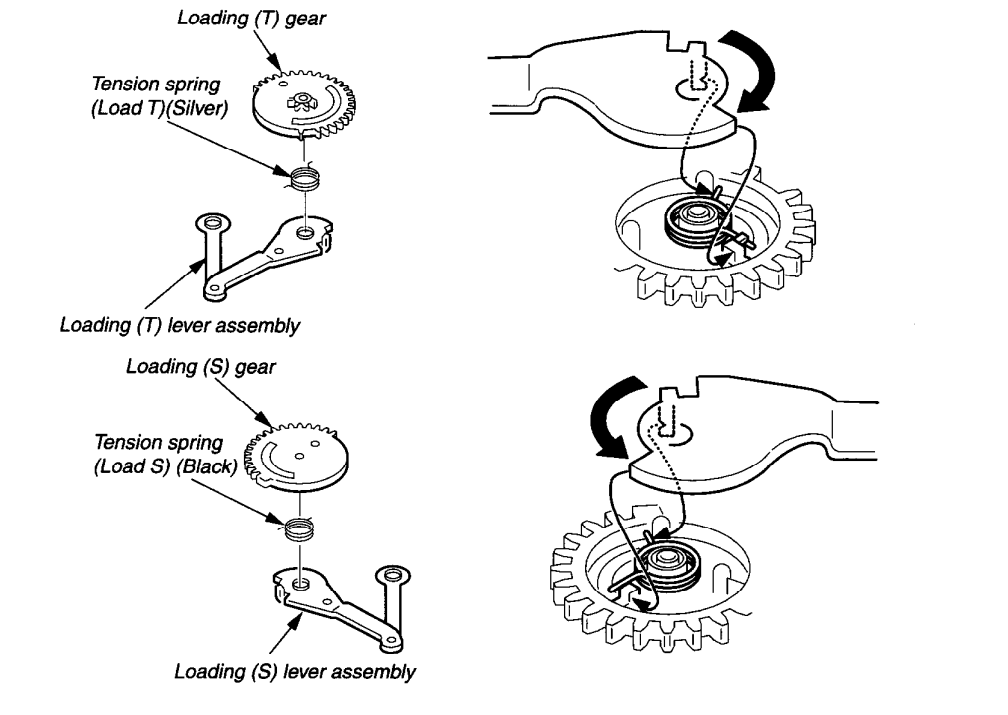


Fig. 3-23

3-19. PULLEY GEAR ASSEMBLY, CLUTCH GEAR

1) Remove rubber belt. (Refer to 3-4.)
2) Remove stopper washer ①.
3) Remove pulley gear assembly ② with clutch gear ③.

[Note on Mounting]
• When attaching them, don't insert strongly.

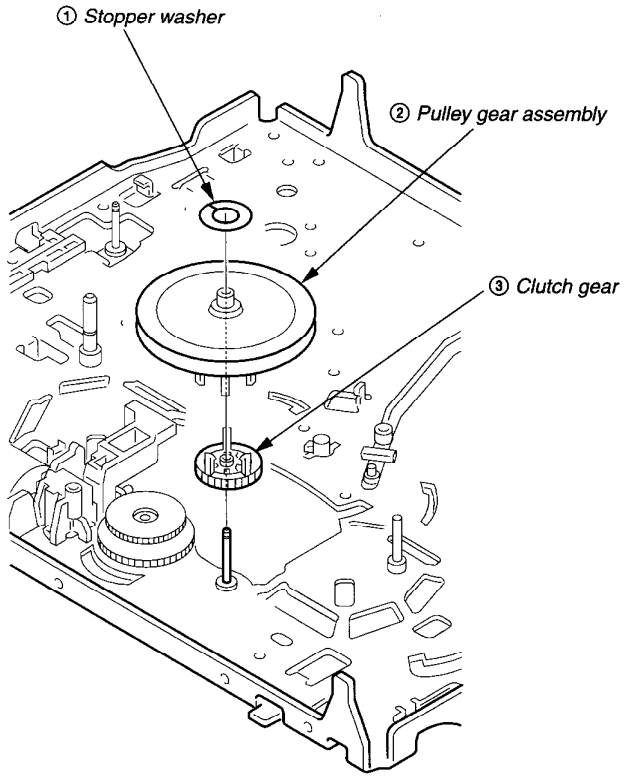


Fig. 3-24

3-20. REEL DIRECT ASSEMBLY

1) Remove rubber belt. (Refer to 3-5.)
2) Remove pulley gear assembly with clutch gear. (Refer to 3-19.)
3) Remove stopper washer ① and reel direct assembly ②.

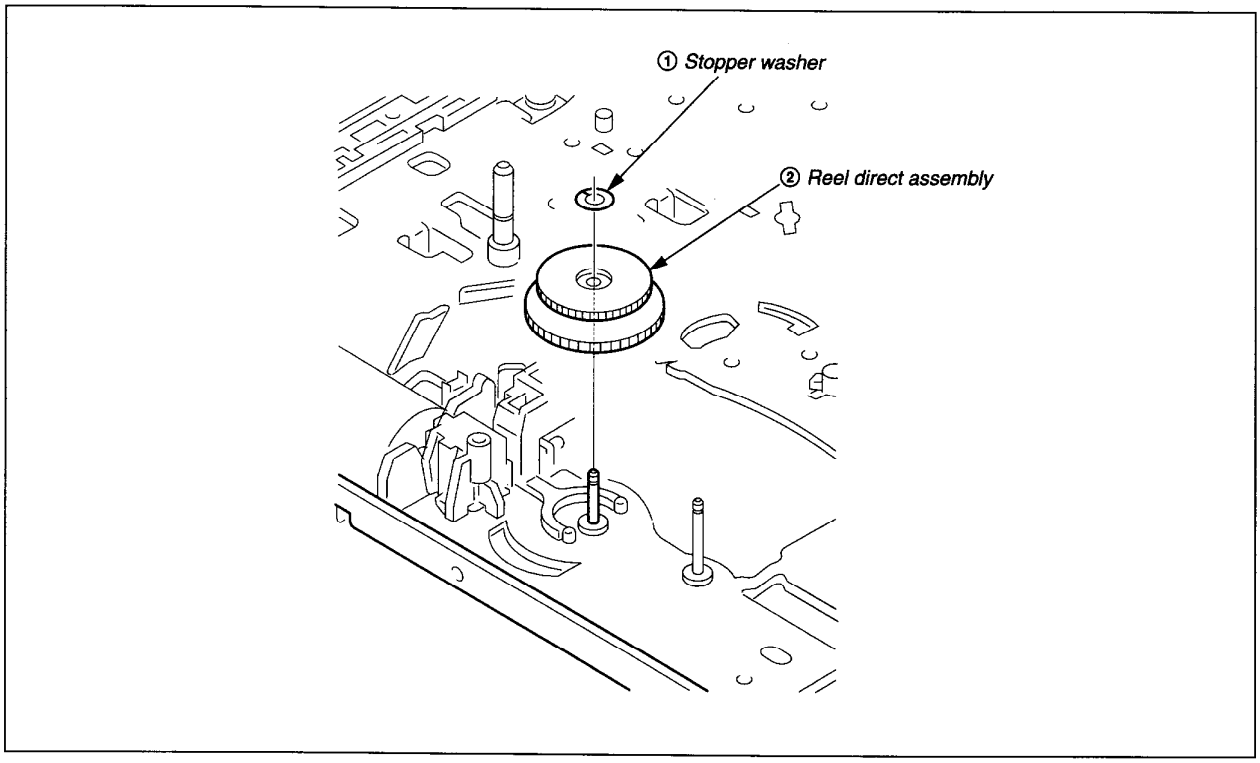


Fig. 3-25

3-21. CASSETTE GUIDE PLATE

1) Remove a screw (P 3 × 8) ① and remove cassette guide plate ②.

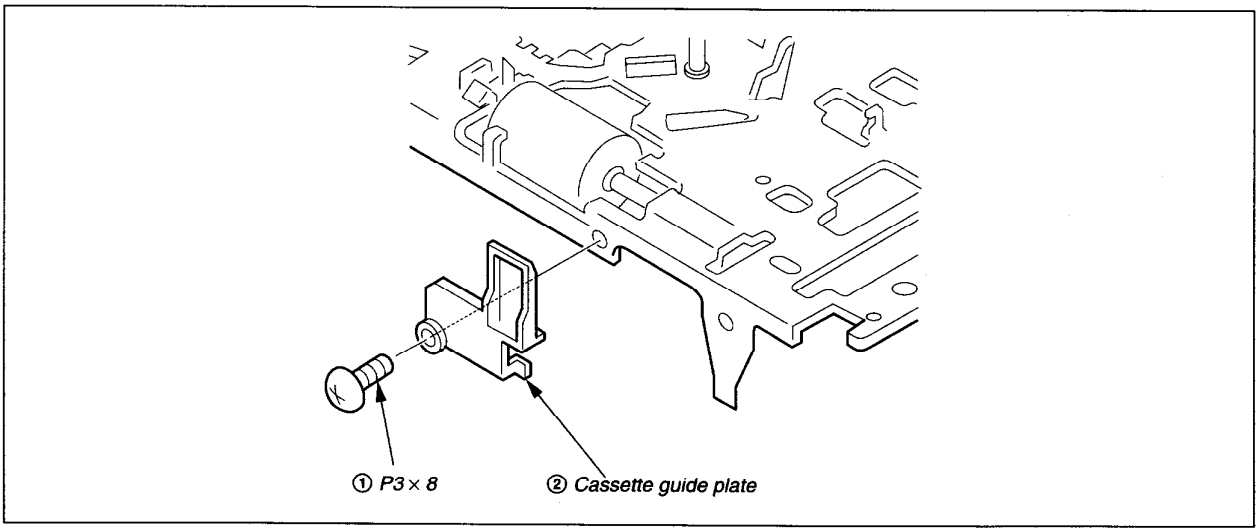


Fig. 3-26

3-23. DRUM BASE, HC ROLLER BLOCK ASSEMBLY

1) Remove the drum assembly. (Refer to 3-2.)
2) Remove screws BVTP 3 × 8 ①.
3) Remove drum base ②.
4) Pull out HC roller assembly ③ straight in the arrow Ⓐ direction.

[Note on Mounting]

- Before attaching drum base ②, confirm the specified locations are coated with grease SG-646 (Ref. No. J-6).
- Tightening screws ① in the order ⓐ to ⓑ to ⓒ.

[Adjustment after Mounting]

- 4-1. Tape path adjustment

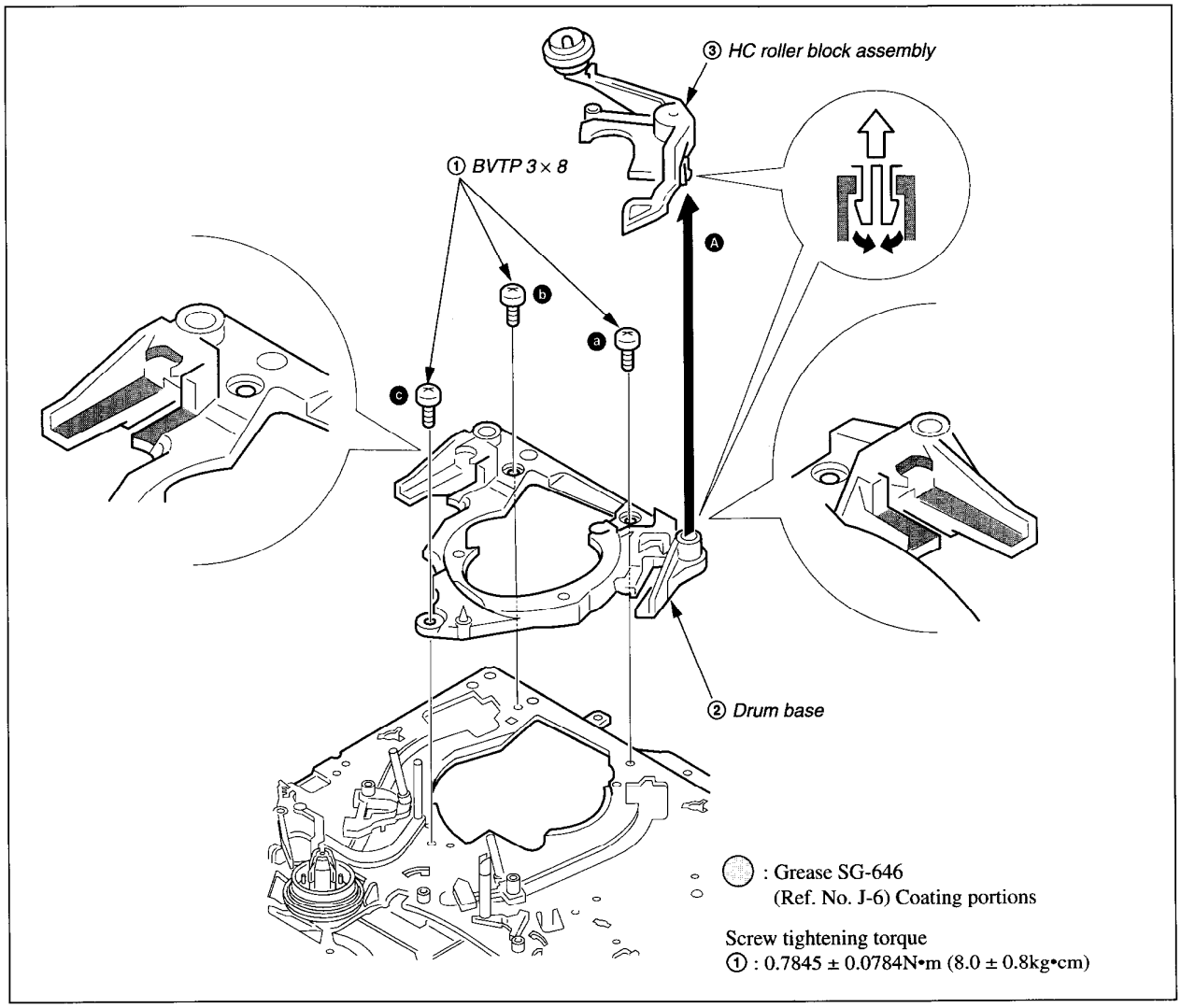


Fig. 3-28

3-24. SHUTTLE (S) AND SHUTTLE (T) BLOCK ASSEMBLIES

1. Guide Roller Assemblies

1) Turn them counterclockwise, then they are out of place, also springs.

[Note on Mounting]

Don't touch the surface that contacts tape with bare hand.

[Adjustment after Mounting]

• 4-1. Tape path adjustment

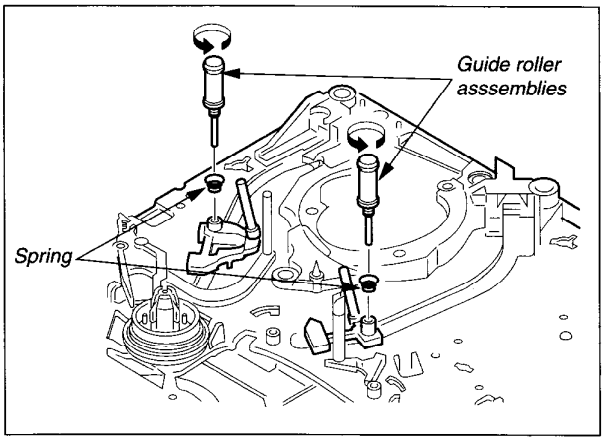


Fig. 3-29

2. Shuttle (S) and Shuttle (T) Assemblies

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove the drum assembly. (Refer to 3-2.)
3) Remove rubber belt. (Refer to 3-4.)
4) Remove FL slider block assembly. (Refer to 3-12.)
5) Remove cam gear. (Refer to 3-13.)
6) Remove slider. (Refer to 3-16.)
7) Remove loading (T) gear assembly and loading (S) gear assembly. (Refer to 3-18.)
8) Remove drum base. (Refer to 3-23.)
9) Remove shuttle (S) or shuttle (T) assembly by slide them backward.

[Note on Mounting]

Don't touch the surface that contacts tape with bare hand.

[Adjustment after Mounting]

• 4-1. Tape path adjustment

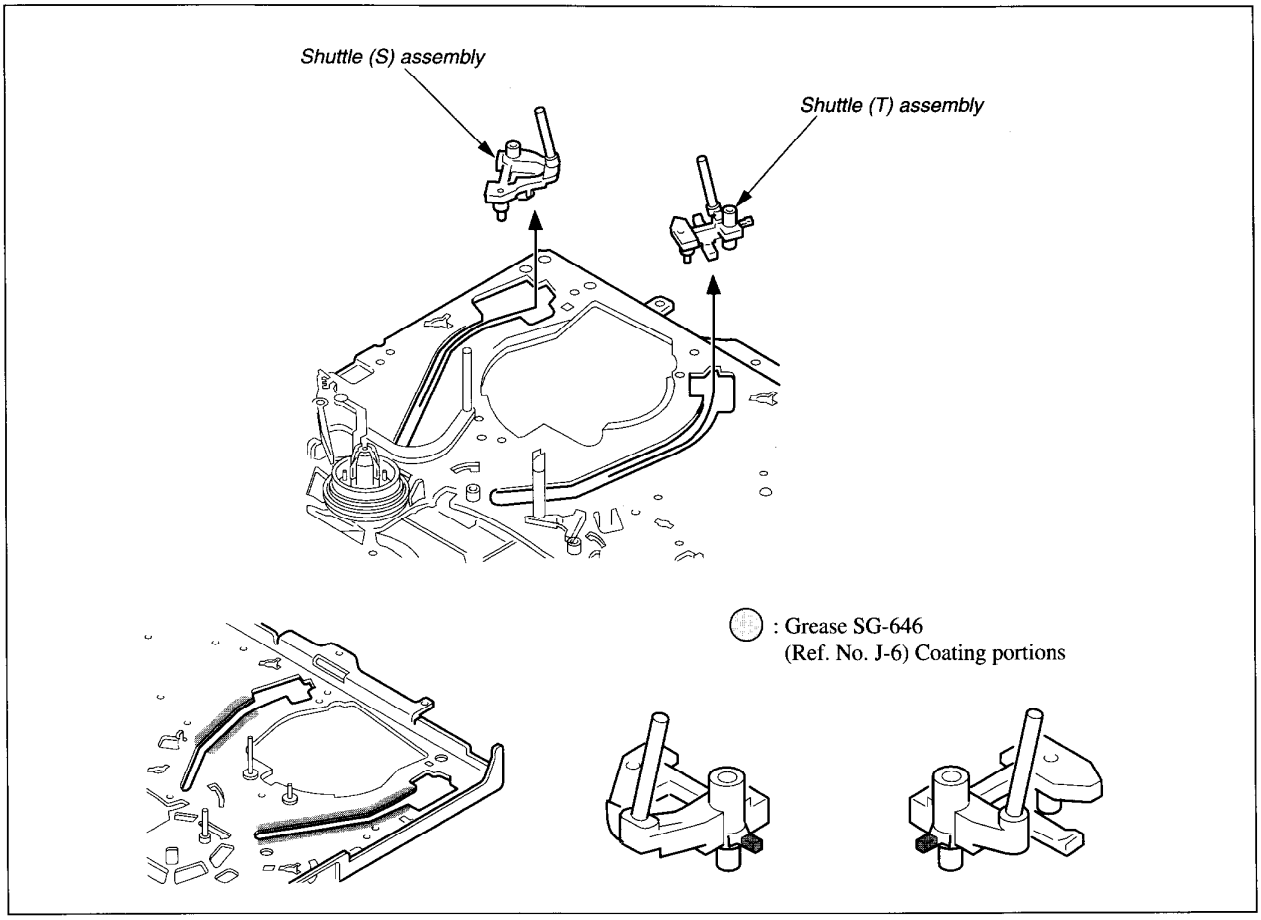


Fig. 3-30

3-25. TG1 ASSEMBLY, REEL (S) TABLE

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove spring (power tension) ① from TG1 driving arm.
3) While spreading claws on the bottom in the arrows Ⓐ direction, pull TG1 assembly ② out.
4) While spreading claws on the top in the arrows Ⓑ direction, pull reel (S) table ③ out.
5) Remove thrust washer ④.

[Note on Mounting]
Don't touch the surface that contacts tape and the braking surface of TG1 assembly with bare hand.

[Adjustment after Mounting]
• 4-1. Tape path adjustment

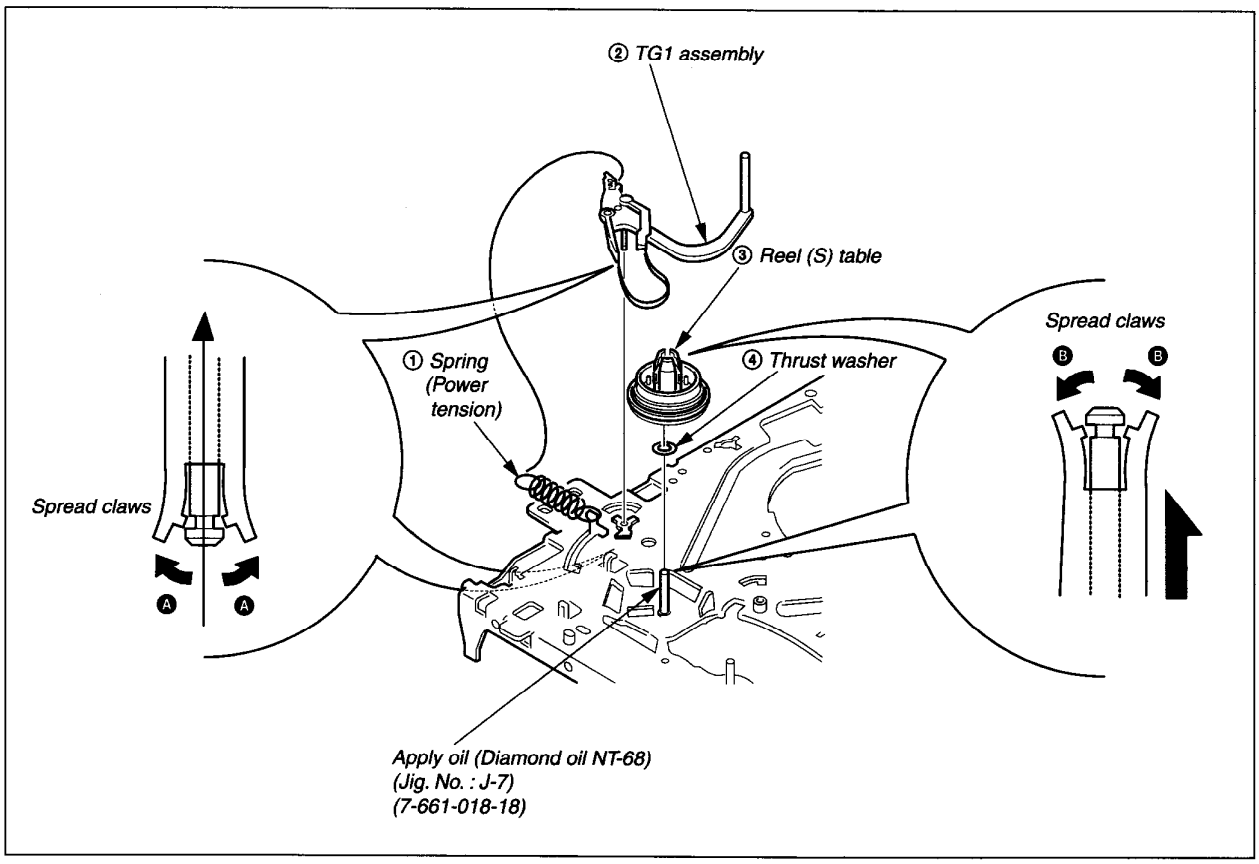


Fig. 3-31

3-26. TG1 FULCRUM BOSS

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove TG1 assembly. (Refer to 3-25.)
3) Turn TG1 fulcrum boss counterclockwise and pull it out.

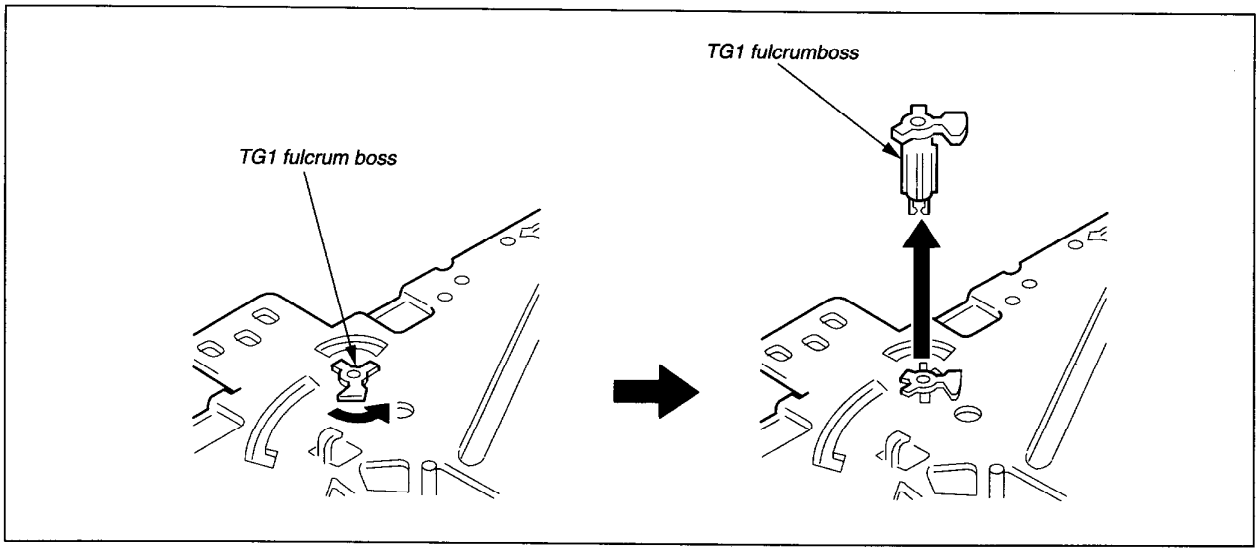


Fig. 3-32

3-27. LUMINOUS PLATE

1) Remove main (T) brake assembly. (Refer to 3-9.)
2) Turn luminous plate clockwise while raising a portion Ⓐ slightly and pull out it.

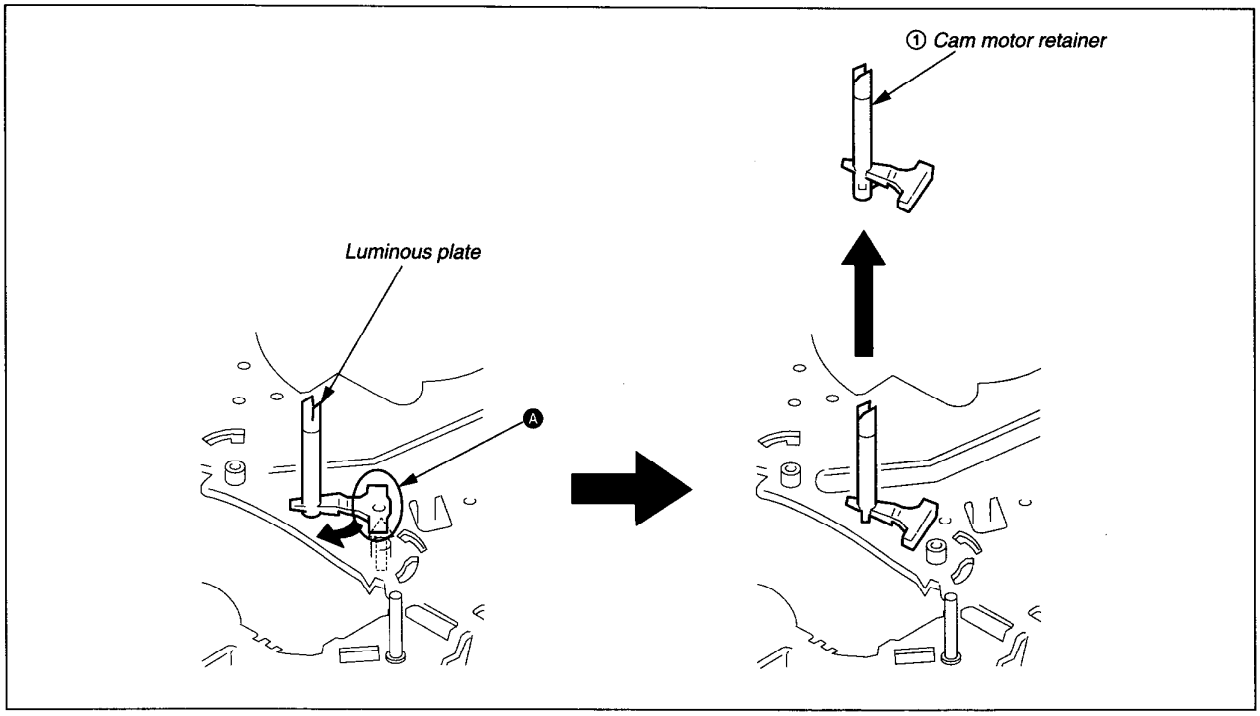


Fig. 3-33

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads.
Each component part of the tape transport system particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.
The tape path system is factory pre-adjusted, when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Fig. 4-1)

Purpose: stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

• Position adjustment

Mode	Threading is completed without a cassette loaded (Playback)
Adjustment locations	Eccentric pin of TG1 band assembly

[Adjustment Method]

1) Allow the unit to go through the threading procedure without a cassette loaded.
2) Set the unit to play back, then turn the eccentric pin so that the tip of tension arm goes to the left side line carved on the mechanical chassis. (Fig. A)
3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

• Tension adjustment

Mode	Playback (SP)
Measuring instrument/tool	Torque cassette VHT-103S (Ref. No. J-1)
Adjustment locations	Position for hooking the tension spring
Specified value	5.05 to 6.52 mN•m (51.5 to 66.5g•cm) (without TC assembly) 3.78 to 5.10 mN•m (38.5 to 52.0g•cm) (with TC assembly)

[Adjustment Method]

1) Playback the torque cassette.
2) Check that the center value deviation reading on the torque cassette meets with the standards.
3) When the reading is higher than the standards : Move the spring toward direction Ⓐ.
   When the reading is less than the standards : Move the spring toward direction Ⓑ.

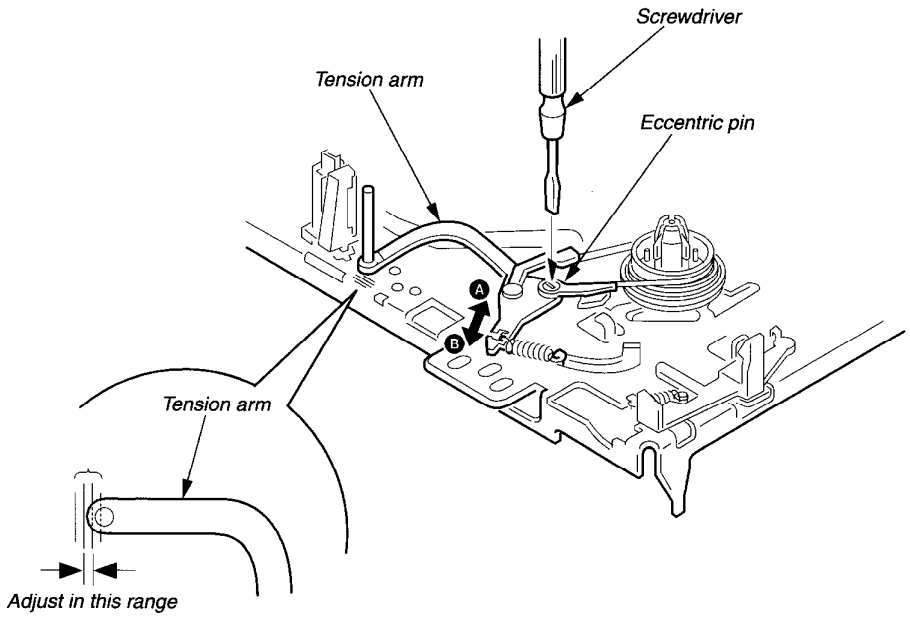


Fig. A

Fig. 4-1

4-1-2. CHECKING THE TENSION AND TORQUE

Purpose : To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.
If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode
Measuring instrument	Torque cassette VHT-103S, VHT-404S

Item	VTR operation mode	Reel to be measured	Measurement value
Review torque	Review	S reel	12.7 to 19.6 mN•m (130 to 200 g•cm)
Take-up torque	Playback	T reel	4.41 to 10.8 mN•m (45 to 110g•cm)
Back tension torque	Playback	S reel	See section 4-1-1.

4-1-3. X-VALUE ADJUSTMENT (Using the tape having the version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the [▲] and [▼] tracking control keys, press both the [▲] and [▼] tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking [AUTO/MANUAL] key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape: KRV-52NE (NTSC)/ 52PL(PAL)
Measuring instrument	Oscilloscope TIME/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH1: Connector PB RF pin for RF PC board check CH2: Connector RF SWP pin for RF PC board check
Adjustment locations	ACE base assembly

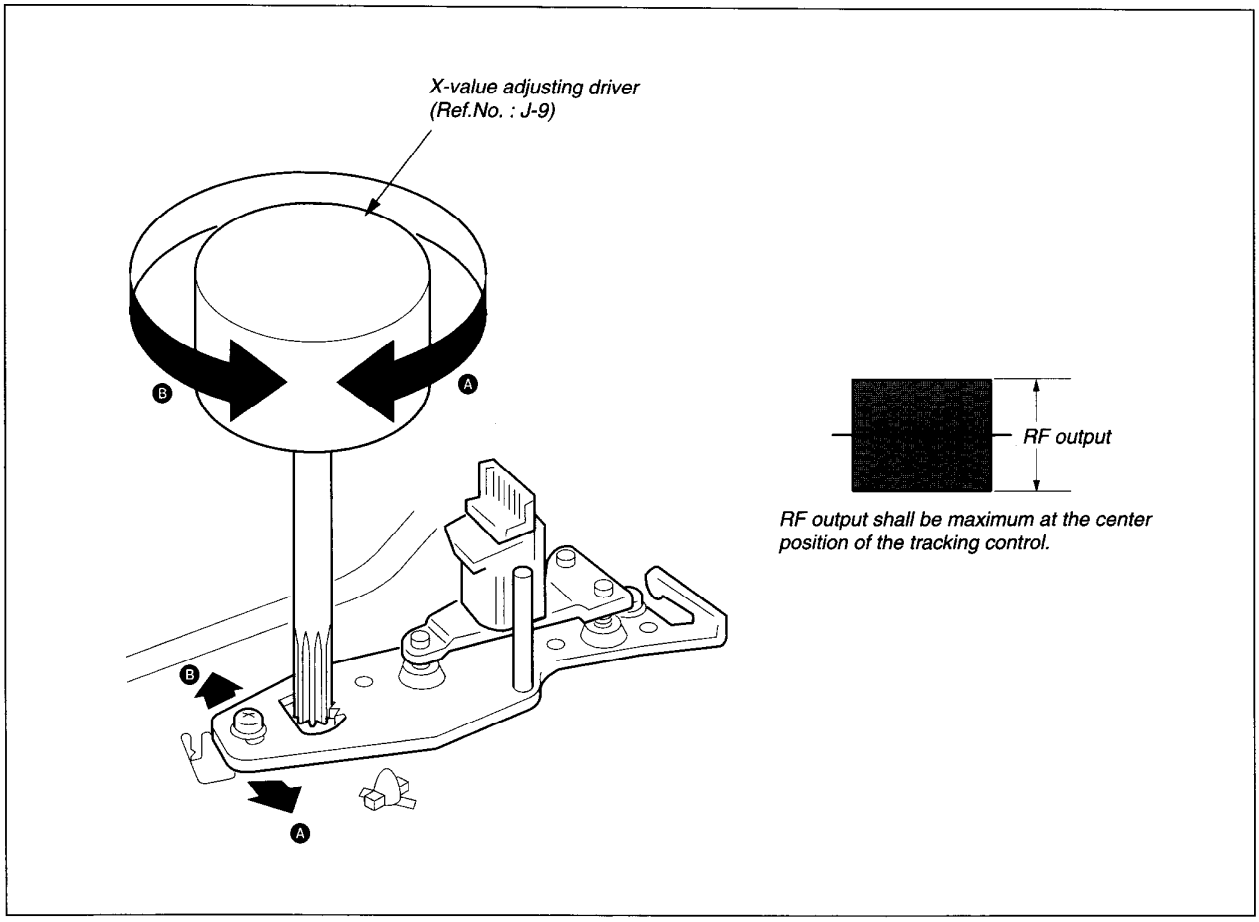


Fig. 4-2

[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with standard gap video heads, set the ACE head position with X-value adjusting driver where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the ACE head position with X-value adjusting driver both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

* TYPE OF DRUM

DZH-68D	DZH-89A
DZH-71D	DZH-90A
DZH-77A	DZH-91A
DZH-78A	DZH-92A
DZH-78B	

1. Adjusting X-value (Using the tape having the version No.)

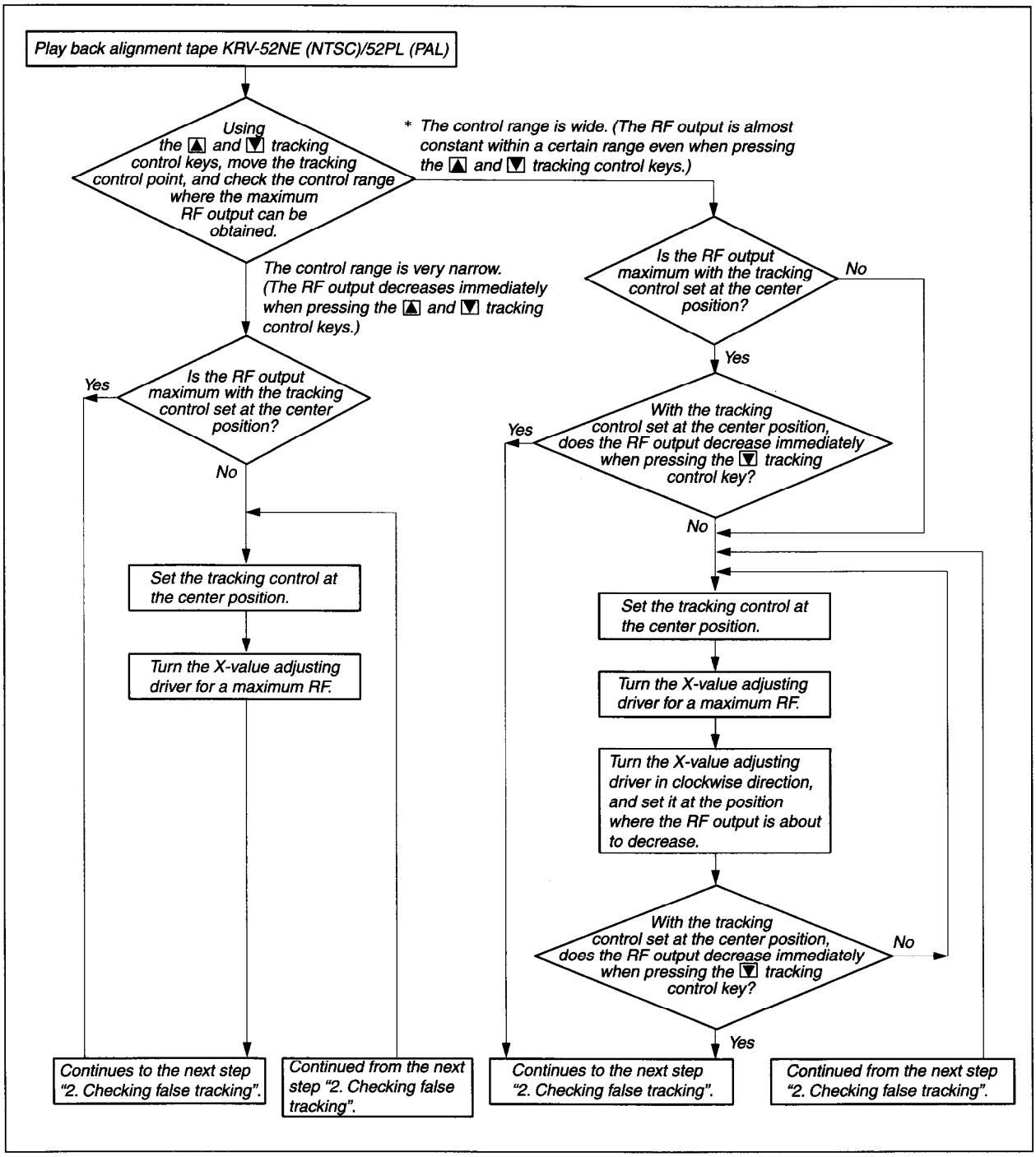

Play back alignment tape KRV-52NE (NTSC)/52PL (PAL)
Using the ▲ and ▼ tracking control keys, move the tracking control point, and check the control range where the maximum RF output can be obtained.
* The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Is the RF output maximum with the tracking control set at the center position?
Yes
No
Is the RF output maximum with the tracking control set at the center position?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
Yes
No
Set the tracking control at the center position.
Turn the X-value adjusting driver for a maximum RF.
Turn the X-value adjusting driver in clockwise direction, and set it at the position where the RF output is about to decrease.
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
No
Yes
Continues to the next step "2. Checking false tracking".
Continued from the next step "2. Checking false tracking".
Continues to the next step "2. Checking false tracking".
Continued from the next step "2. Checking false tracking".

Table. 4-1

2. Checking false tracking
(Using the tape having the version No.)

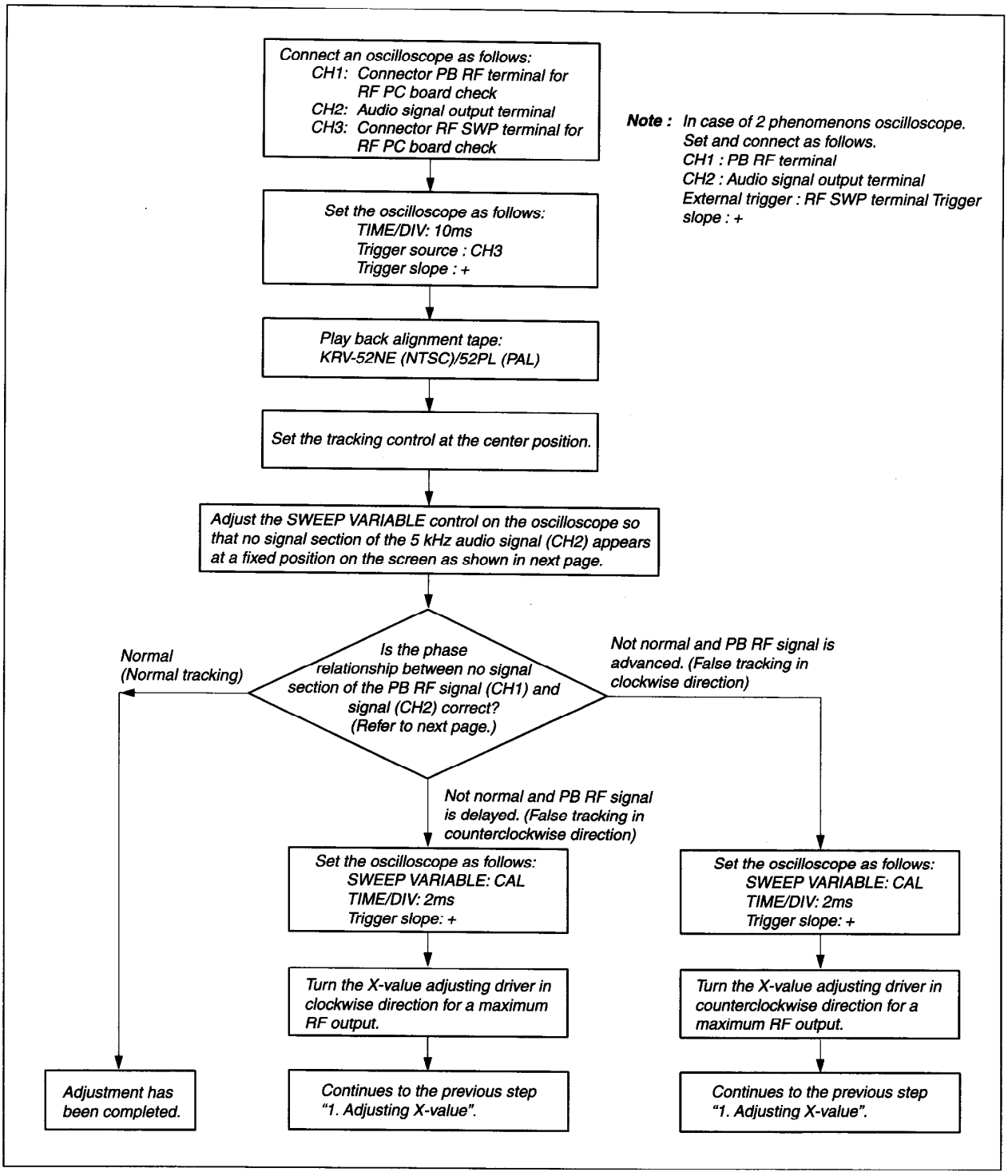

Connect an oscilloscope as follows:
CH1: Connector PB RF terminal for RF PC board check
CH2: Audio signal output terminal
CH3: Connector RF SWP terminal for RF PC board check
Note : In case of 2 phenomenons oscilloscope. Set and connect as follows.
CH1 : PB RF terminal
CH2 : Audio signal output terminal
External trigger : RF SWP terminal Trigger slope : +
Set the oscilloscope as follows:
TIME/DIV: 10ms
Trigger source : CH3
Trigger slope : +
Play back alignment tape:
KRV-52NE (NTSC)/52PL (PAL)
Set the tracking control at the center position.
Adjust the SWEEP VARIABLE control on the oscilloscope so that no signal section of the 5 kHz audio signal (CH2) appears at a fixed position on the screen as shown in next page.
Is the phase relationship between no signal section of the PB RF signal (CH1) and signal (CH2) correct? (Refer to next page.)
Normal (Normal tracking)
Not normal and PB RF signal is advanced. (False tracking in clockwise direction)
Not normal and PB RF signal is delayed. (False tracking in counterclockwise direction)
Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +
Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +
Turn the X-value adjusting driver in clockwise direction for a maximum RF output.
Turn the X-value adjusting driver in counterclockwise direction for a maximum RF output.
Adjustment has been completed.
Continues to the previous step "1. Adjusting X-value".
Continues to the previous step "1. Adjusting X-value".

Table. 4-2

Using the tape having the version No.

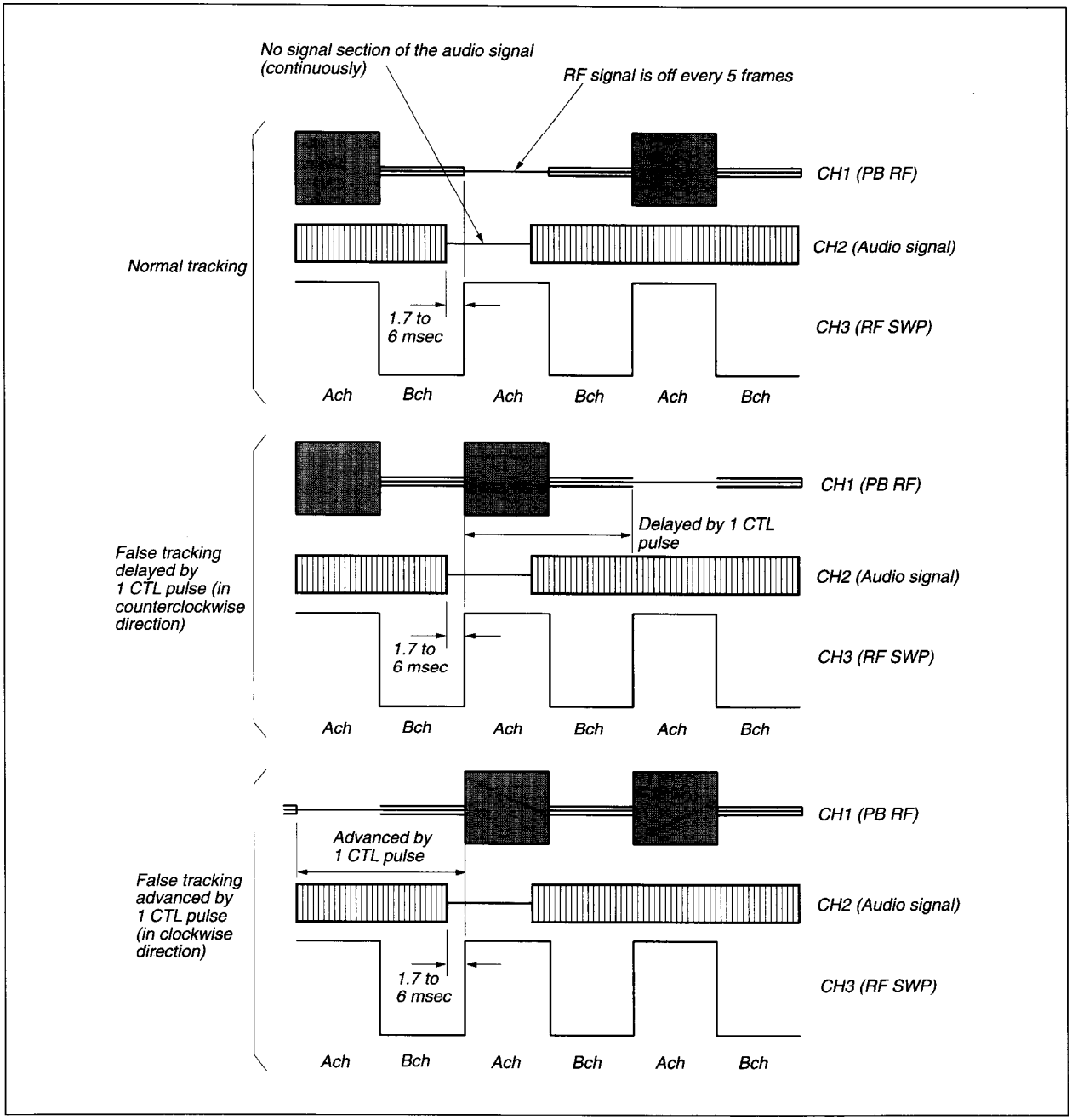


Table. 4-3

[Adjustment Method (*For the VCRs Equipped with Narrow Gap Video Heads)]

Set the tracking control at the center position. Set the ACE head position with X-value adjusting driver both where a maximum RF output is obtained and where the RF output decreases immediately when the ▲ tracking control key is pressed.

* TYPE OF DRUM
DZH-98A

1. Adjusting X-value
(Using the tape having the version No.)

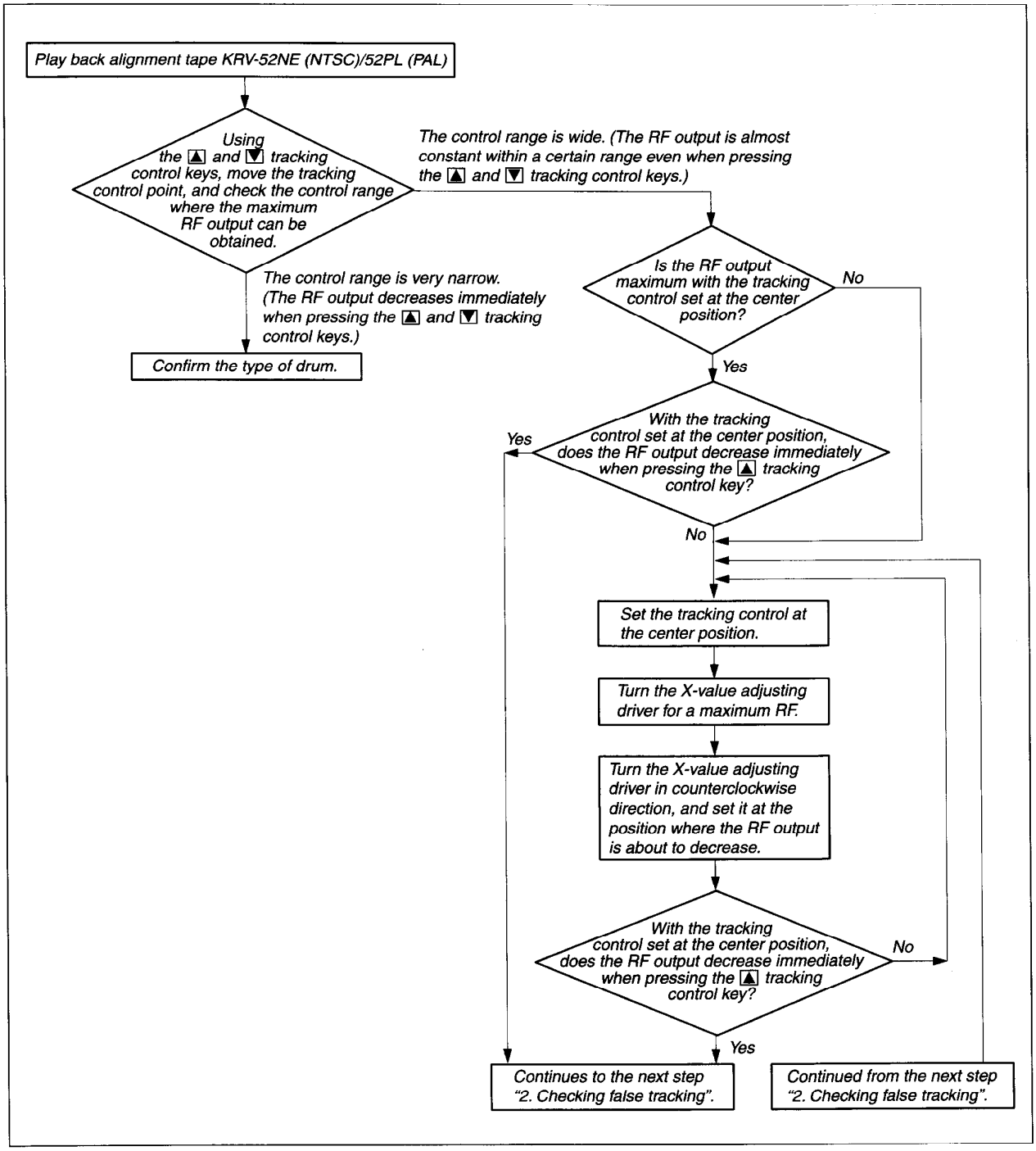

Play back alignment tape KRV-52NE (NTSC)/52PL (PAL)
Using the ▲ and ▼ tracking control keys, move the tracking control point, and check the control range where the maximum RF output can be obtained.
The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Confirm the type of drum.
Is the RF output maximum with the tracking control set at the center position?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▲ tracking control key?
Yes
No
Set the tracking control at the center position.
Turn the X-value adjusting driver for a maximum RF.
Turn the X-value adjusting driver in counterclockwise direction, and set it at the position where the RF output is about to decrease.
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▲ tracking control key?
No
Yes
Continues to the next step "2. Checking false tracking".
Continued from the next step "2. Checking false tracking".

Table. 4-4

2. Checking false tracking
(Using the tape having the version No.)

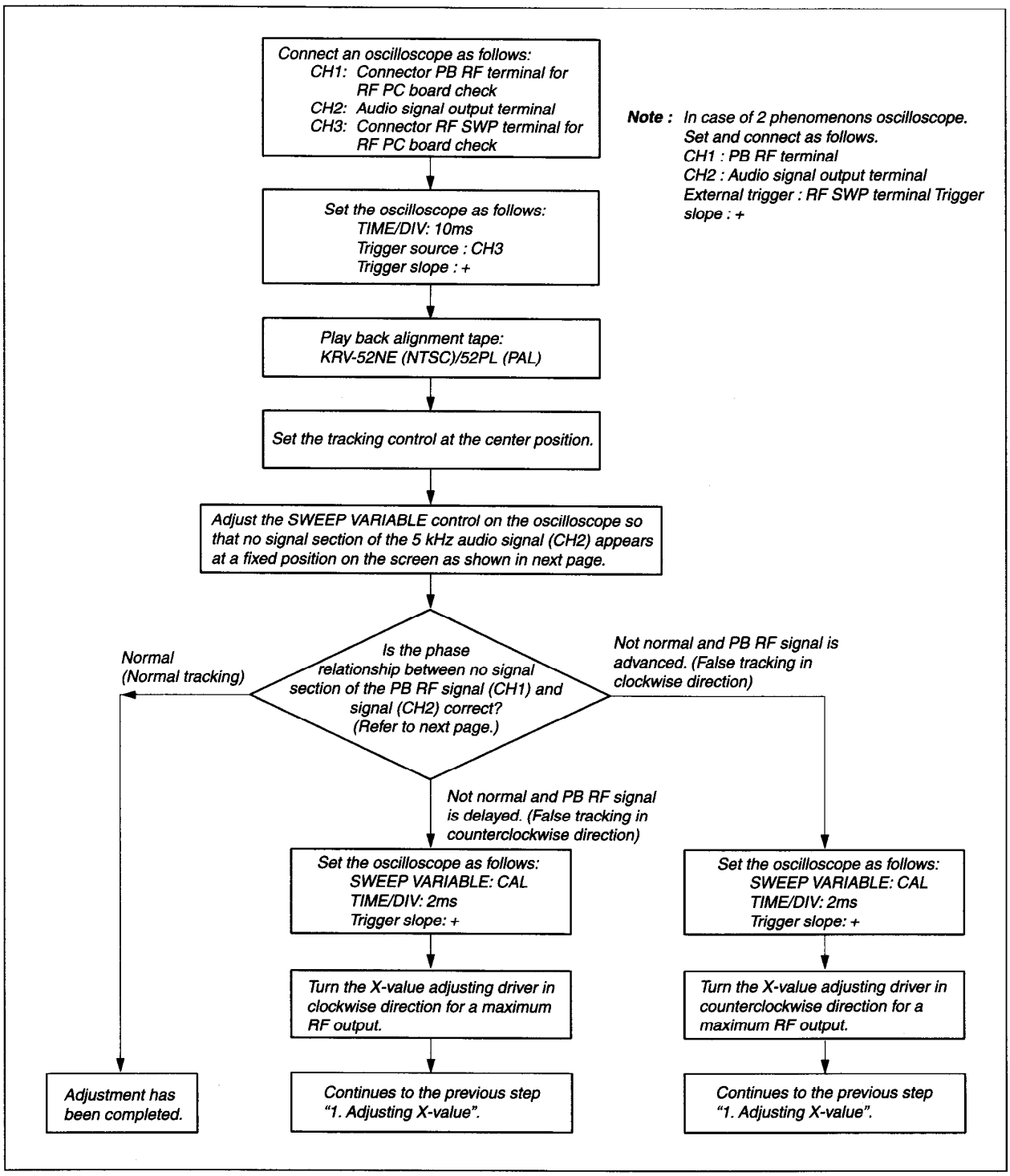

Connect an oscilloscope as follows:
CH1: Connector PB RF terminal for RF PC board check
CH2: Audio signal output terminal
CH3: Connector RF SWP terminal for RF PC board check
Note : In case of 2 phenomenons oscilloscope. Set and connect as follows.
CH1 : PB RF terminal
CH2 : Audio signal output terminal
External trigger : RF SWP terminal Trigger slope : +
Set the oscilloscope as follows:
TIME/DIV: 10ms
Trigger source : CH3
Trigger slope : +
Play back alignment tape:
KRV-52NE (NTSC)/52PL (PAL)
Set the tracking control at the center position.
Adjust the SWEEP VARIABLE control on the oscilloscope so that no signal section of the 5 kHz audio signal (CH2) appears at a fixed position on the screen as shown in next page.
Is the phase relationship between no signal section of the PB RF signal (CH1) and signal (CH2) correct? (Refer to next page.)
Normal (Normal tracking)
Not normal and PB RF signal is advanced. (False tracking in clockwise direction)
Not normal and PB RF signal is delayed. (False tracking in counterclockwise direction)
Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +
Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +
Turn the X-value adjusting driver in clockwise direction for a maximum RF output.
Turn the X-value adjusting driver in counterclockwise direction for a maximum RF output.
Adjustment has been completed.
Continues to the previous step "1. Adjusting X-value".
Continues to the previous step "1. Adjusting X-value".

Table. 4-5

Using the tape having the version No.

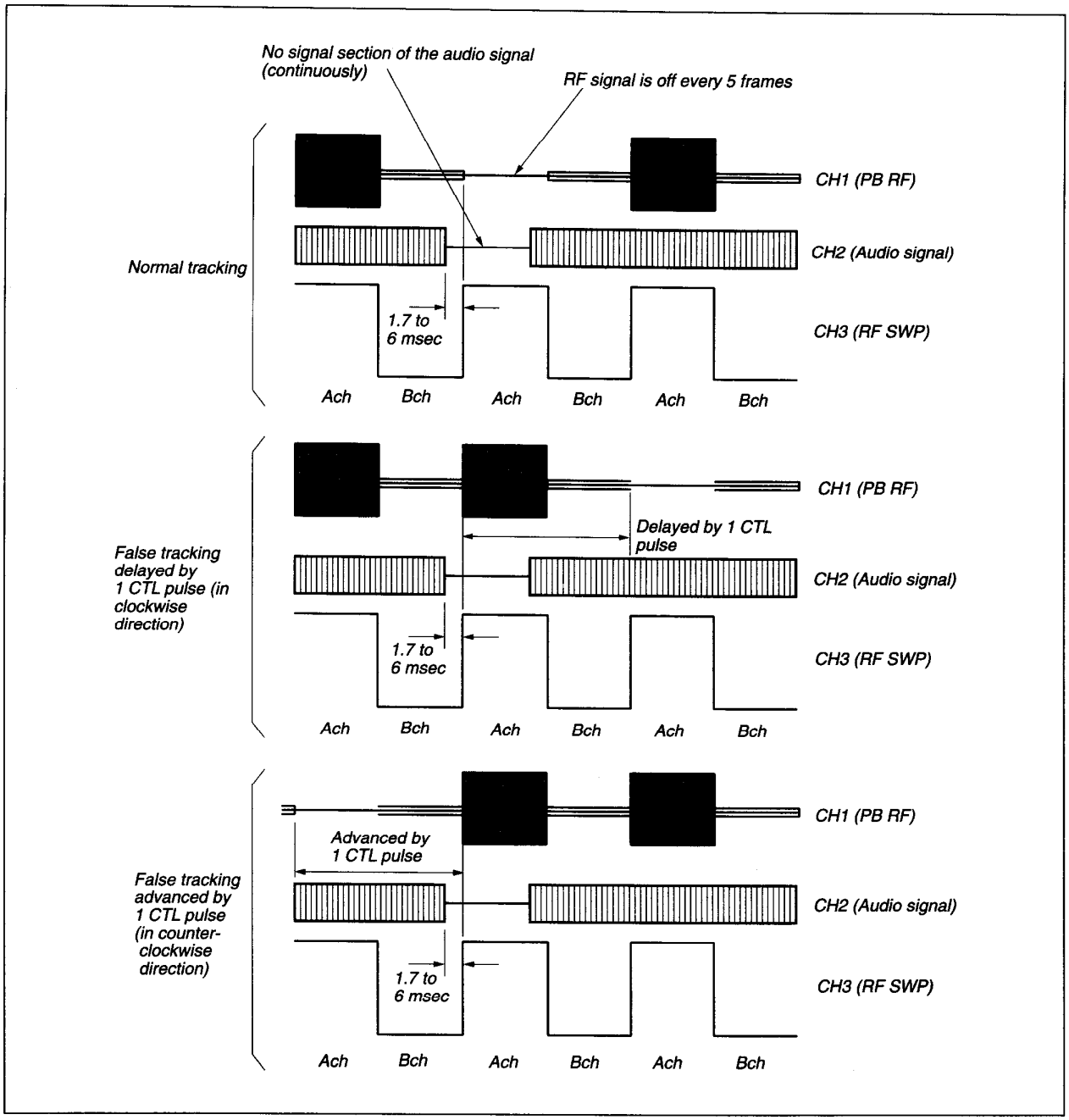

No signal section of the audio signal (continuously)
RF signal is off every 5 frames
Normal tracking
CH1 (PB RF)
CH2 (Audio signal)
CH3 (RF SWP)
1.7 to 6 msec
Ach
Bch
False tracking delayed by 1 CTL pulse (in clockwise direction)
Delayed by 1 CTL pulse
False tracking advanced by 1 CTL pulse (in counter-clockwise direction)
Advanced by 1 CTL pulse

Table. 4-6

3-22. CAM MOTOR ASSEMBLY, LIMITER SELECTION ARM

1) Remove FL complete assembly. (Refer to 3-1.)
2) Remove rubber belt. (Refer to 3-4.)
3) Remove FL slider block assembly. (Refer to 3-12.)
4) Remove worm wheel. (Refer to 3-13.)
5) Remove pulley gear assembly with clutch gear. (Refer to 3-19.)
6) Remove and reel direct assembly. (Refer to 3-20.)
7) Remove cam motor retainer ① in the arrow Ⓑ while pushing its claw in the arrow Ⓐ direction.
8) Then cam motor assembly ② is out of place.
9) Remove the boss of limiter selection arm ③ from the hole on the mechanical chassis by pushing in the arrow Ⓒ direction and push it in the arrow Ⓓ direction and remove it in the arrow Ⓔ direction.

[Note on Mounting]

• Before attaching cam motor assembly ②, confirm the specified locations are coated with grease SG-646 (Ref. No. J-6).

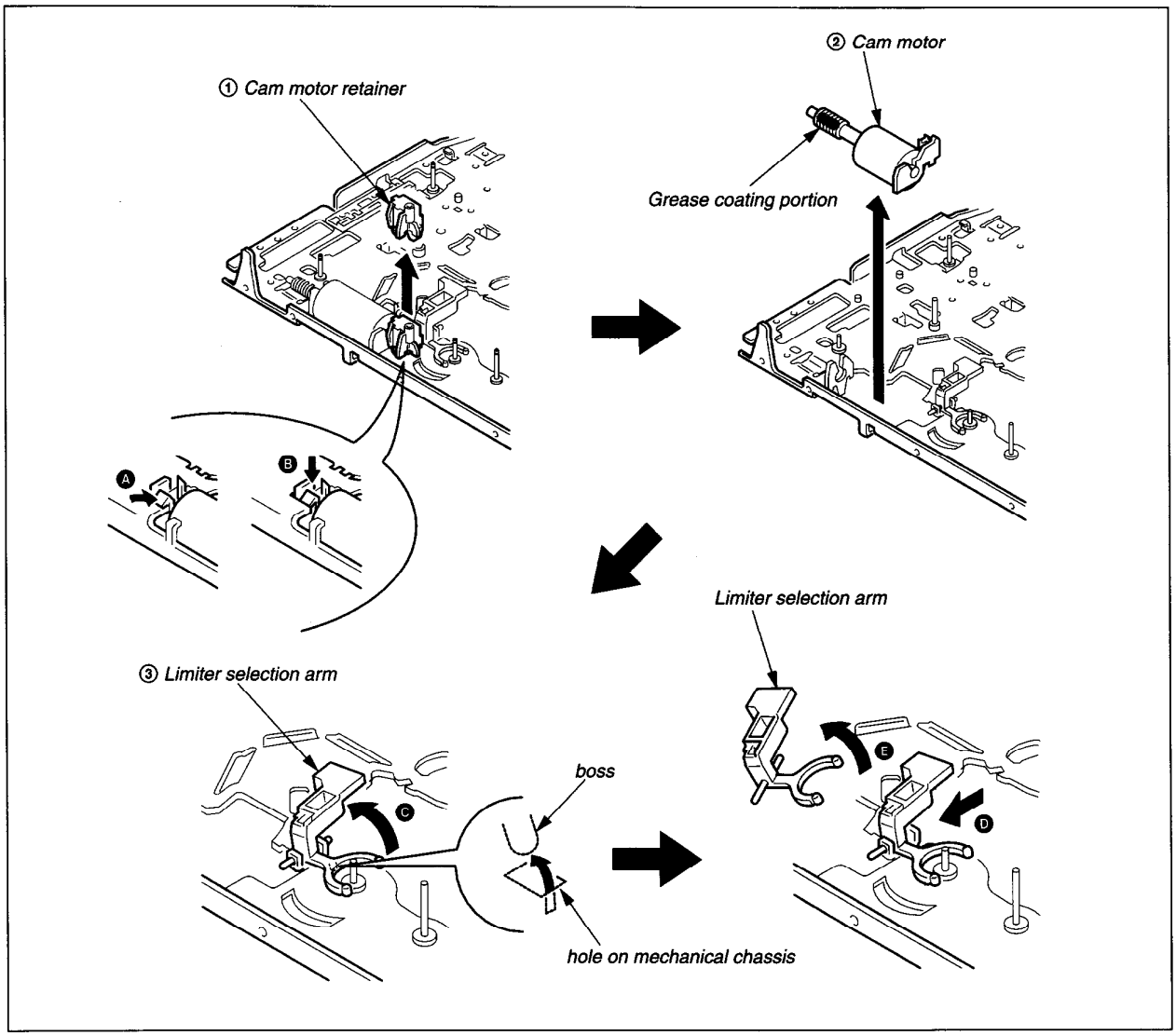


Fig. 3-27

Reference

• X-VALUE ADJUSTMENT
(Using KRV-52NE having no version No.)

Purpose : To obtain compatibility with other VCRs.

Precaution : Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys. Press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape: KRV-52NE (For NTSC having no version No.)
Measuring instrument	Oscilloscope TIME/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH1: Connector PB RF pin for RF PC board check CH2 : Connector RF SWP pin for RF PC board check
Adjustment locations	ACE base assembly

[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with standard gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

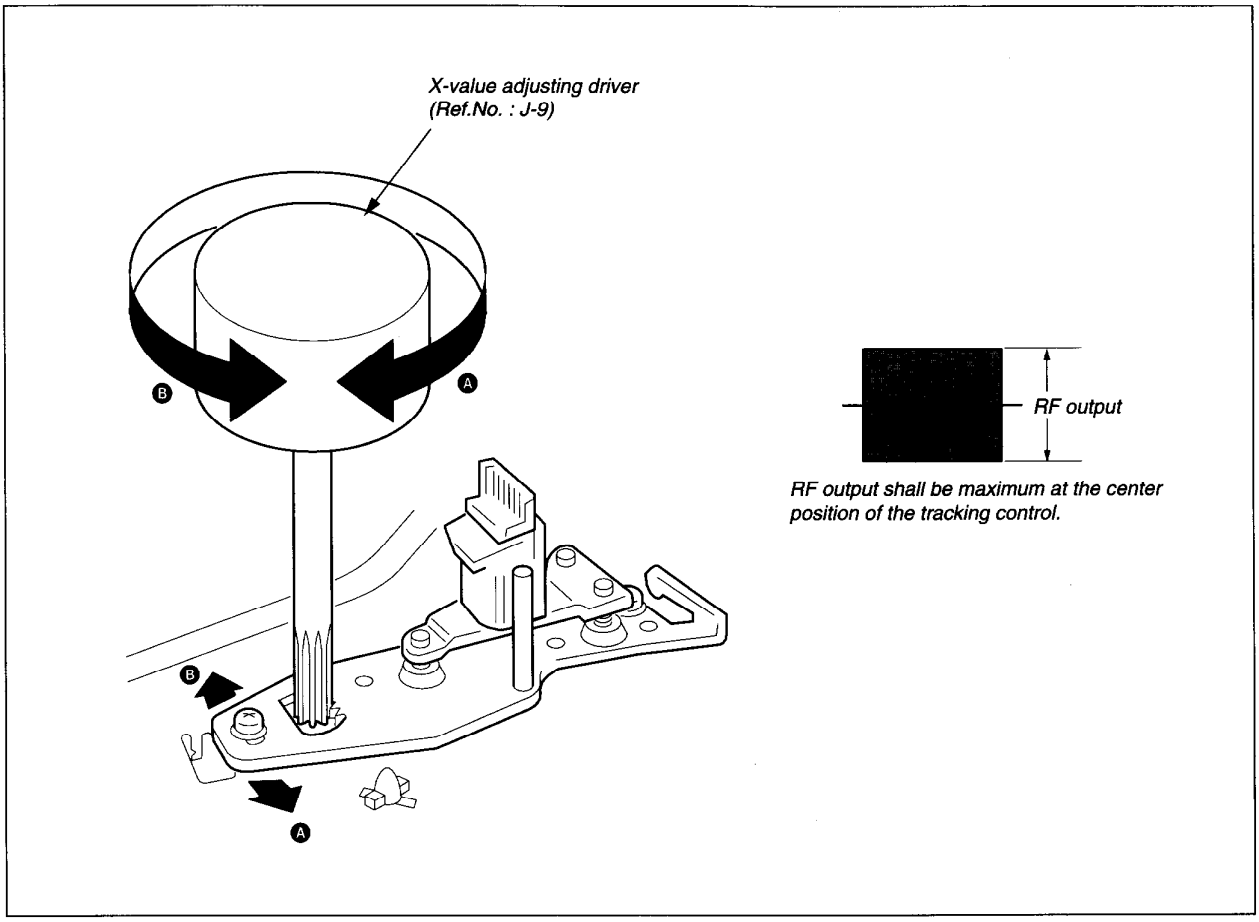


Fig. 4-3

X-VALUE ADJUSTMENT
(Using the tape having no version No.)

* TYPE OF DRUM

DZH-68D	DZH-89A
DZH-71D	DZH-90A
DZH-77A	DZH-91A
DZH-78A	DZH-92A
DZH-78B	

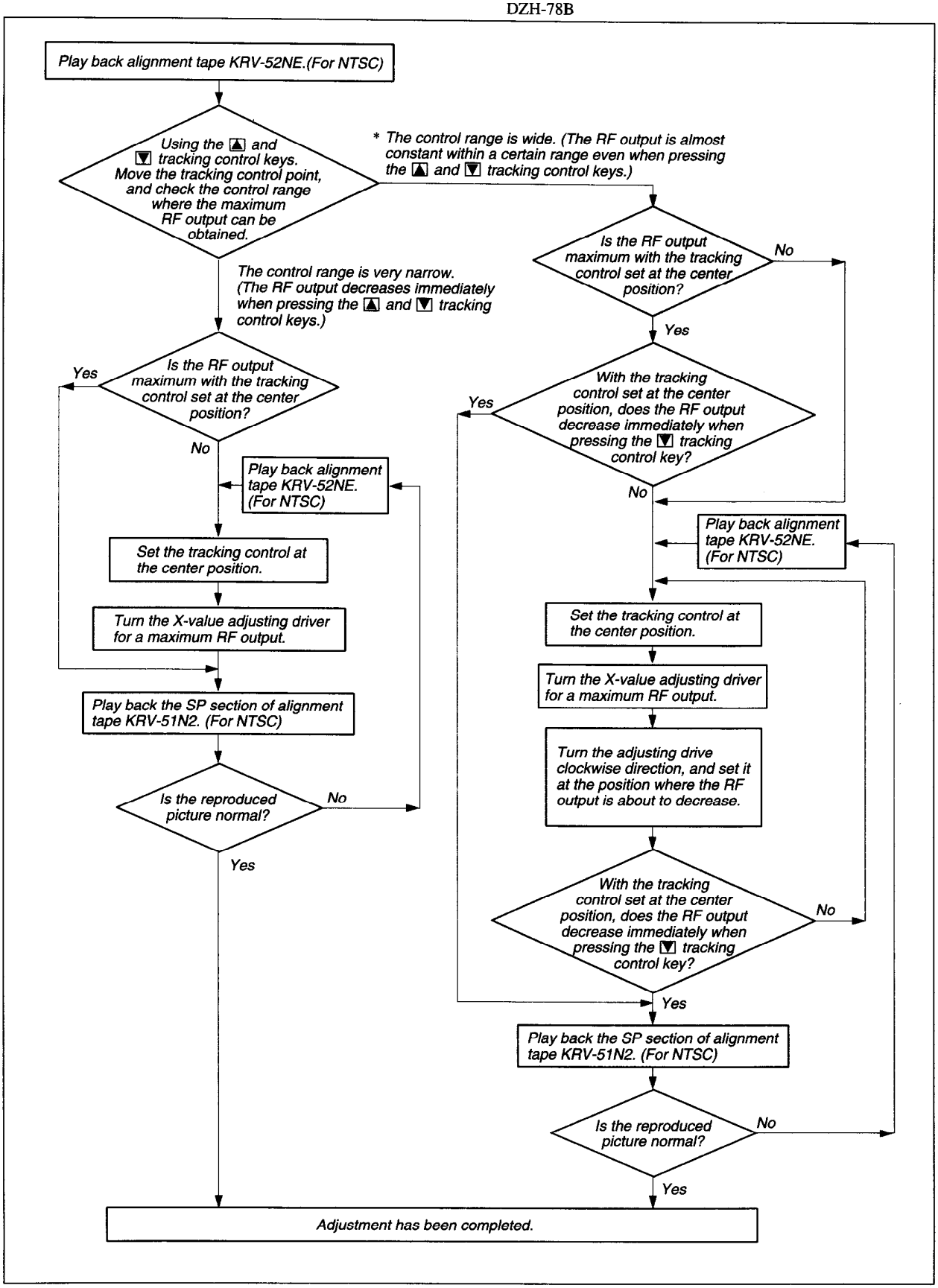

Play back alignment tape KRV-52NE.(For NTSC)
Using the ▲ and ▼ tracking control keys. Move the tracking control point, and check the control range where the maximum RF output can be obtained.
* The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
Is the RF output maximum with the tracking control set at the center position?
No
Yes
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Is the RF output maximum with the tracking control set at the center position?
Yes
No
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
Yes
No
Play back alignment tape KRV-52NE. (For NTSC)
Play back alignment tape KRV-52NE. (For NTSC)
Set the tracking control at the center position.
Turn the X-value adjusting driver for a maximum RF output.
Set the tracking control at the center position.
Turn the X-value adjusting driver for a maximum RF output.
Turn the adjusting drive clockwise direction, and set it at the position where the RF output is about to decrease.
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Is the reproduced picture normal?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
No
Yes
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Is the reproduced picture normal?
No
Yes
Adjustment has been completed.

Table. 4-7

[Adjustment Method (*For the VCRs Equipped with Narrow Gap Video Heads)]

Set the tracking control at the center position. Set the ACE head position with X-value adjusting driver both where a maximum RF output is obtained and where the RF output decreases immediately when the ▲ tracking control key is pressed.

* TYPE OF DRUM
DZH-98A

Using the tape having the version No.

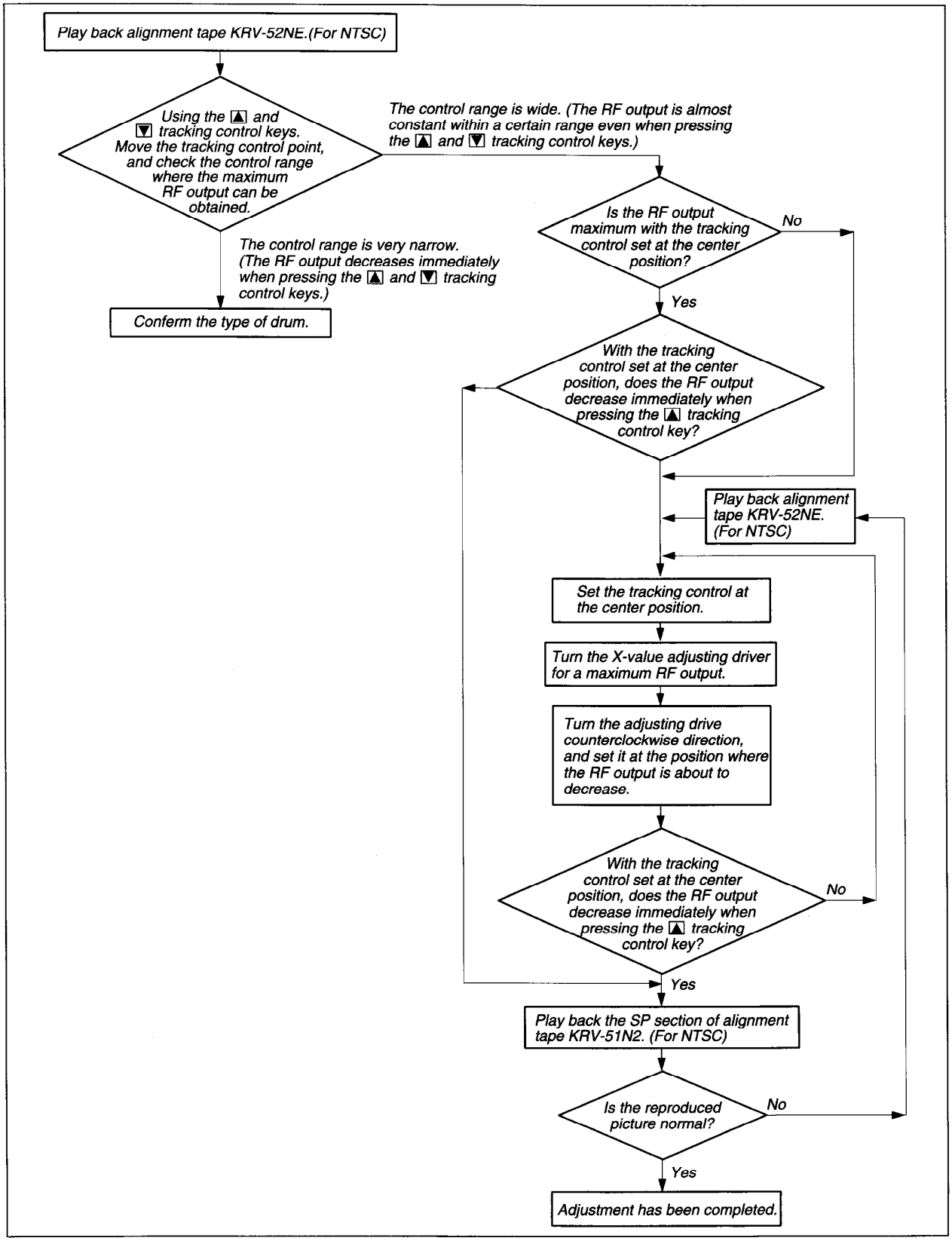

Play back alignment tape KRV-52NE.(For NTSC)
Using the ▲ and ▼ tracking control keys. Move the tracking control point, and check the control range where the maximum RF output can be obtained.
The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Conferm the type of drum.
Is the RF output maximum with the tracking control set at the center position?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▲ tracking control key?
Play back alignment tape KRV-52NE. (For NTSC)
Set the tracking control at the center position.
Turn the X-value adjusting driver for a maximum RF output.
Turn the adjusting drive counterclockwise direction, and set it at the position where the RF output is about to decrease.
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▲ tracking control key?
No
Yes
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Is the reproduced picture normal?
No
Yes
Adjustment has been completed.

Table. 4-9

4-1-4. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6

Mode	Playback
Signal	Alignment tape: KRV-52NE (NTSC)/52PL (PAL)
Measuring instrument	Oscilloscope TIME/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH1: Connector PB RF pin for RF PC board check CH2: Connector RF SWP pin for RF PC board check
Adjustment locations	Height adjustment screw for No. 3 tape guide roller Height adjustment screw for No. 6 tape guide roller

[Adjustment Method]

The following adjustment shall be carried out after completed Section 4-1-2. X-VALUE ADJUSTMENT.

1) Deactivate the automatic tracking control, and set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).
2) Check if the RF output changes in amplitude by pressing the tracking control key. The RF output should change periodically (changes from a minimum amplitude to a maximum amplitude, and to the minimum amplitude again).

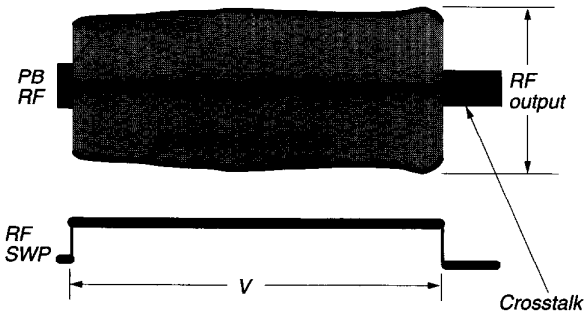


Fig. 4-4

3) Turn the height adjustment screws of tape guide rollers No. 3 and No. 6 so that the RF output envelope becomes as flat as possible.
4) Press the ▲ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.
5) Press the ▼ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

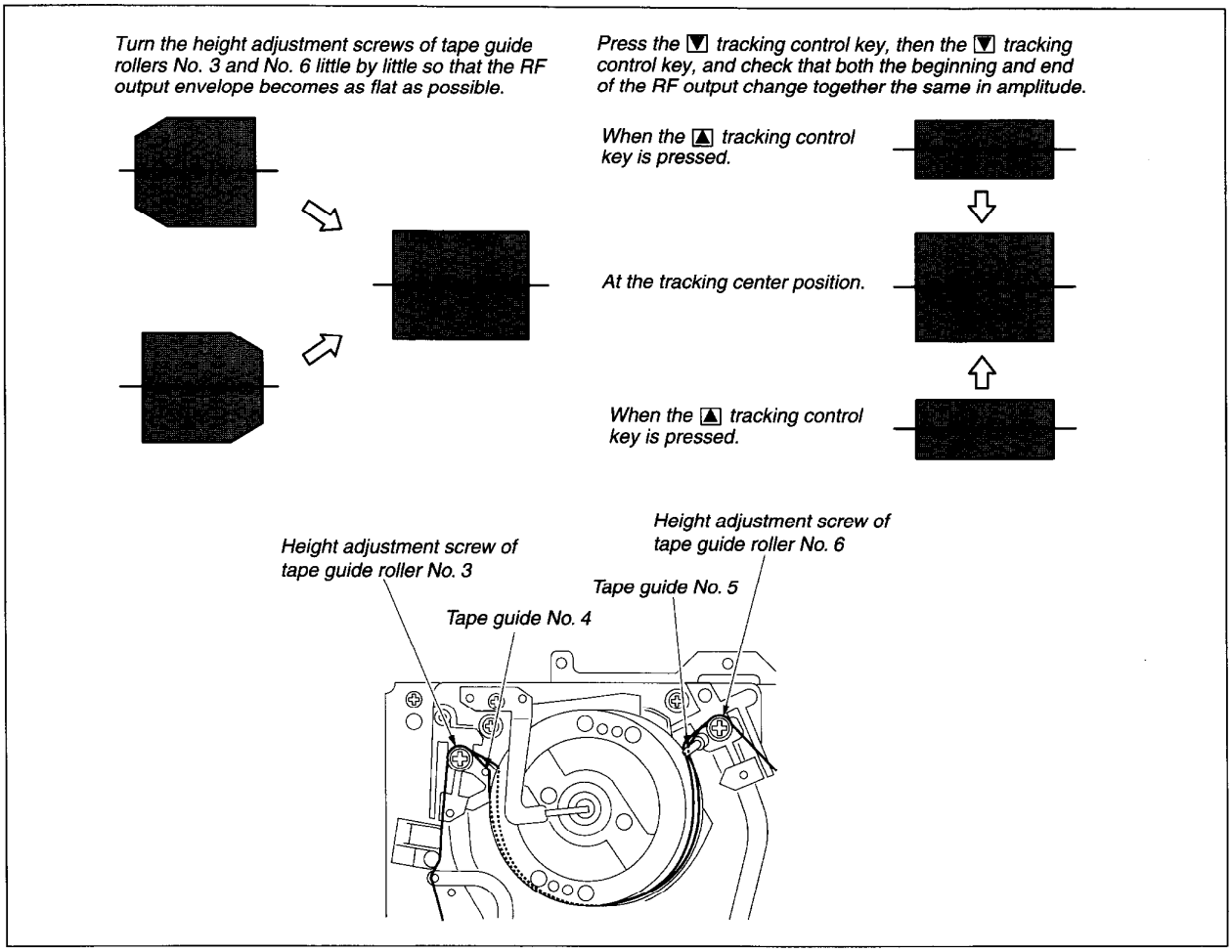

Turn the height adjustment screws of tape guide rollers No. 3 and No. 6 little by little so that the RF output envelope becomes as flat as possible.
Press the ▼ tracking control key, then the ▼ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.
When the ▲ tracking control key is pressed.
At the tracking center position.
When the ▲ tracking control key is pressed.
Height adjustment screw of tape guide roller No. 3
Height adjustment screw of tape guide roller No. 6
Tape guide No. 5
Tape guide No. 4

Fig. 4-5

4-1-5. ACE HEAD ASSEMBLY HEIGHT AND AZIMUTH ADJUSTMENT

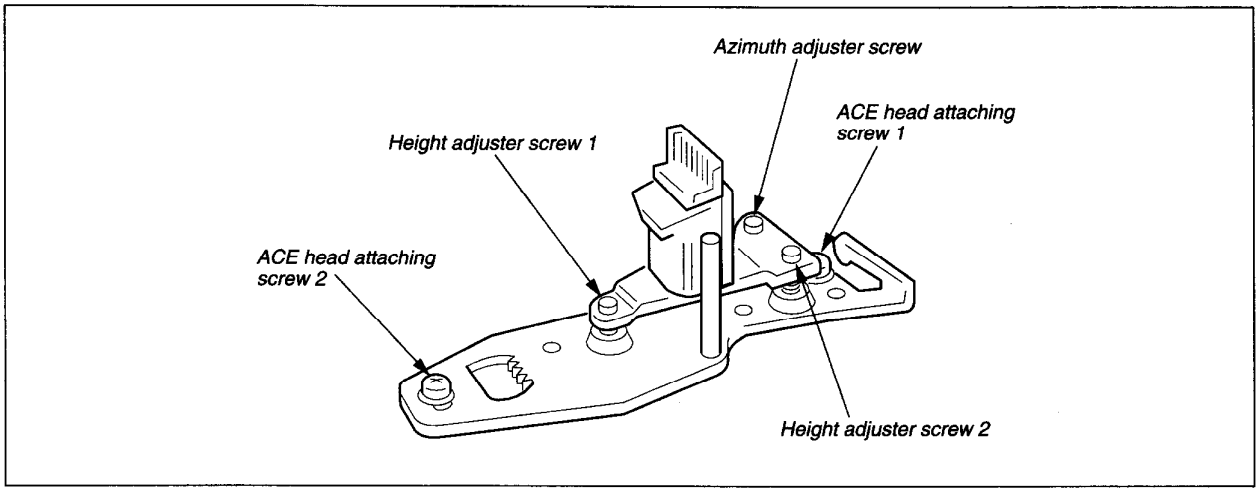

Azimuth adjuster screw
ACE head attaching screw 1
Height adjuster screw 1
ACE head attaching screw 2
Height adjuster screw 2

Fig. 4-6

Mode	Playback
Signal	Alignment tape: (5kHz) KRV-52NE (NTSC)/52PL (PAL)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster screws 1 and 2.

[Adjustment Method]

1) Adjust the height as shown in the figure with turning the height adjuster screws 1 and 2, and the azimuth adjuster screw in the same direction, the same degree gradually.

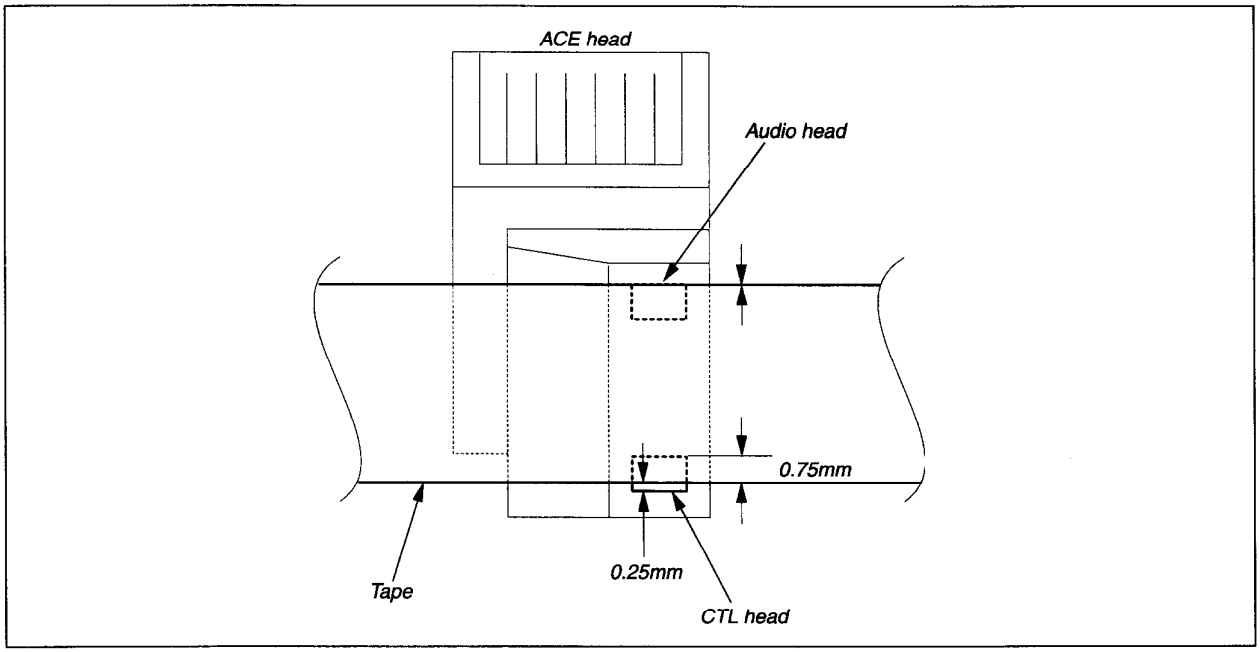


Fig. 4-7

2) Alternately adjust the azimuth adjuster screw to make A maximum and B minimum. (To maintain even audio output at maximum with minimum deviation.)
3) Perform section 4-1-2. X-VALUE ADJUSTMENT.
4) Tighten ACE head attaching screw 2. (Torque: More than 0.29 N•m (3.0 kg•cm)).

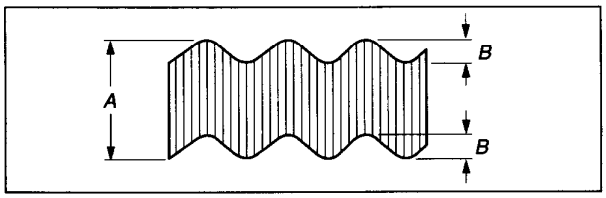


Fig. 4-8

4-1-6. X-VALUE FINE ADJUSTMENT

The procedure is the same as the item 4-1-3. Please refer to pages 37 to 46.

4-1-7. HEIGHT ADJUSTMENT OF GUIDE ROLLER NO. 8

Note : Applicable to the set having TG8 height adjusting screw as shown in the figure. Do not adjust when TG8 height adjusting screw is not attached.

Mode	Playback
Signal	Any signal on thin tape (T-160 or the like) near the tape top.
Adjustment location	TG8 height adjusting screw

[Adjustment Method]

1) Confirm there is no wrinkles of tape between TG8 and capstan and no tape curl at the upper or the lower flanges of TG8 during 10 seconds CUE running.
2) When there is curls or wrinkles, adjust with TG8 height adjusting screw.
3) Confirm there is no wrinkles of tape between TG8 and capstan and no tape curl at the upper or the lower flanges of TG8 during 8 seconds REV running.
4) When there is curls or wrinkles, adjust with TG8 height adjusting screw.

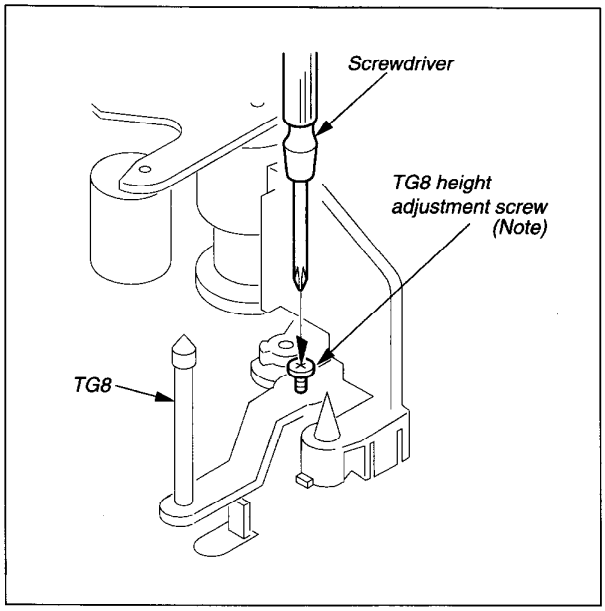


Fig. 4-9

4-1-8. CHECKING THE LINEARITY AND FLUCTUATION OF THE RF OUTPUT

1) Set the RF output to the maximum level using the tracking buttons.

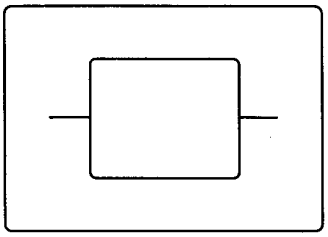


Fig. 4-10-1

2) Perform fine adjustment of the voltage level range of the oscilloscope, adjust the RF output deviation to within 6 gradations.

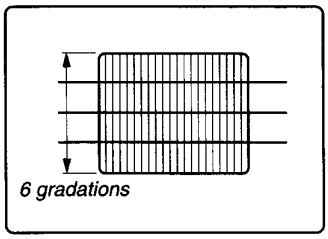


Fig. 4-10-2

3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 4 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.

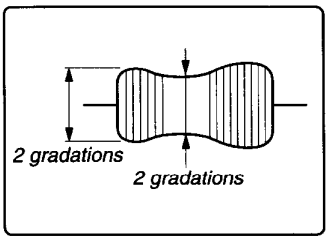


Fig. 4-10-3

5) Check that RF output fluctuation between minimum and maximum levels is within 13%.

5. EXPLODED VIEWS

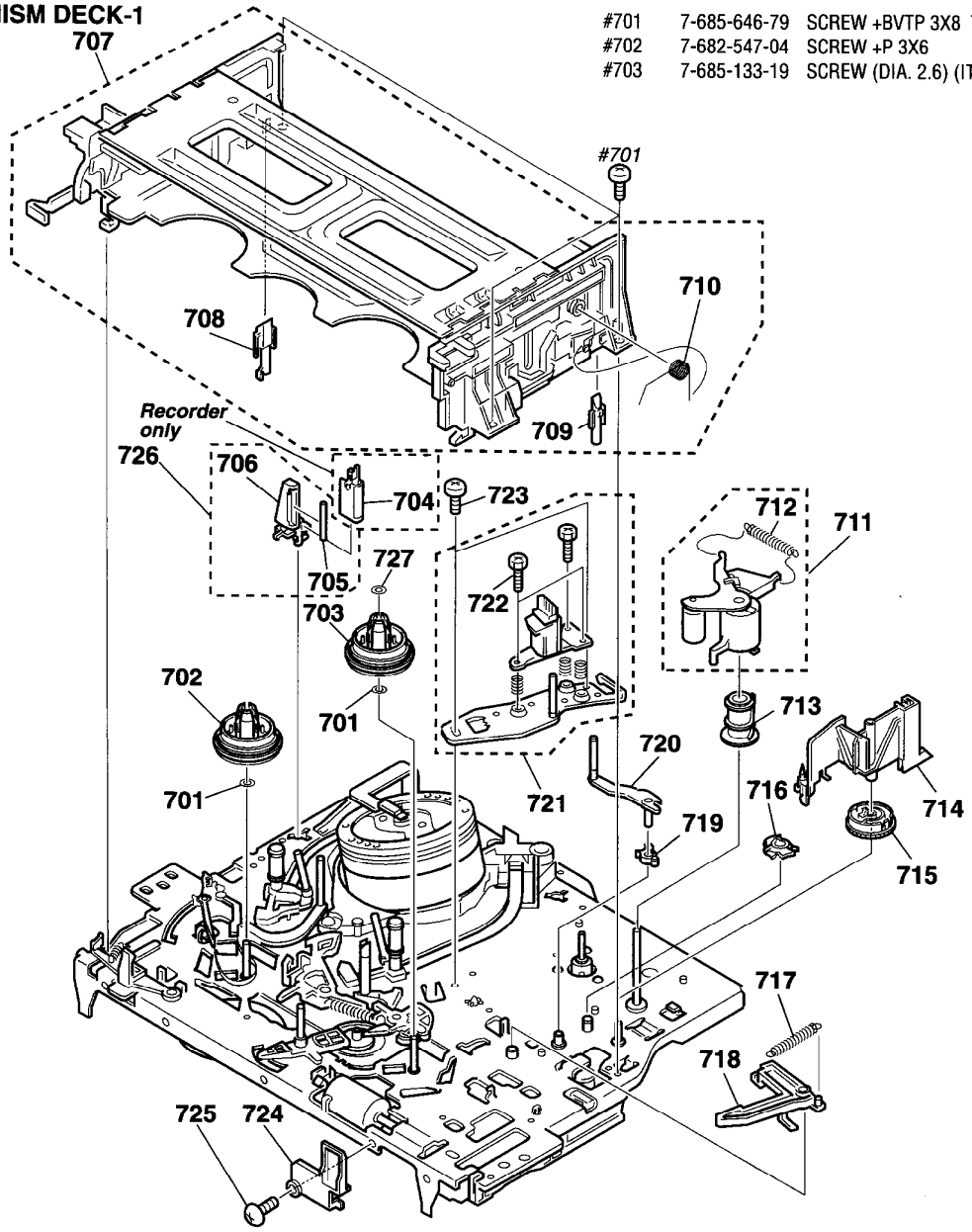
Note:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

****
HARDWARE LIST
****

#701	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3
#702	7-682-547-04	SCREW +P 3X6
#703	7-685-133-19	SCREW (DIA. 2.6) (IT3B)

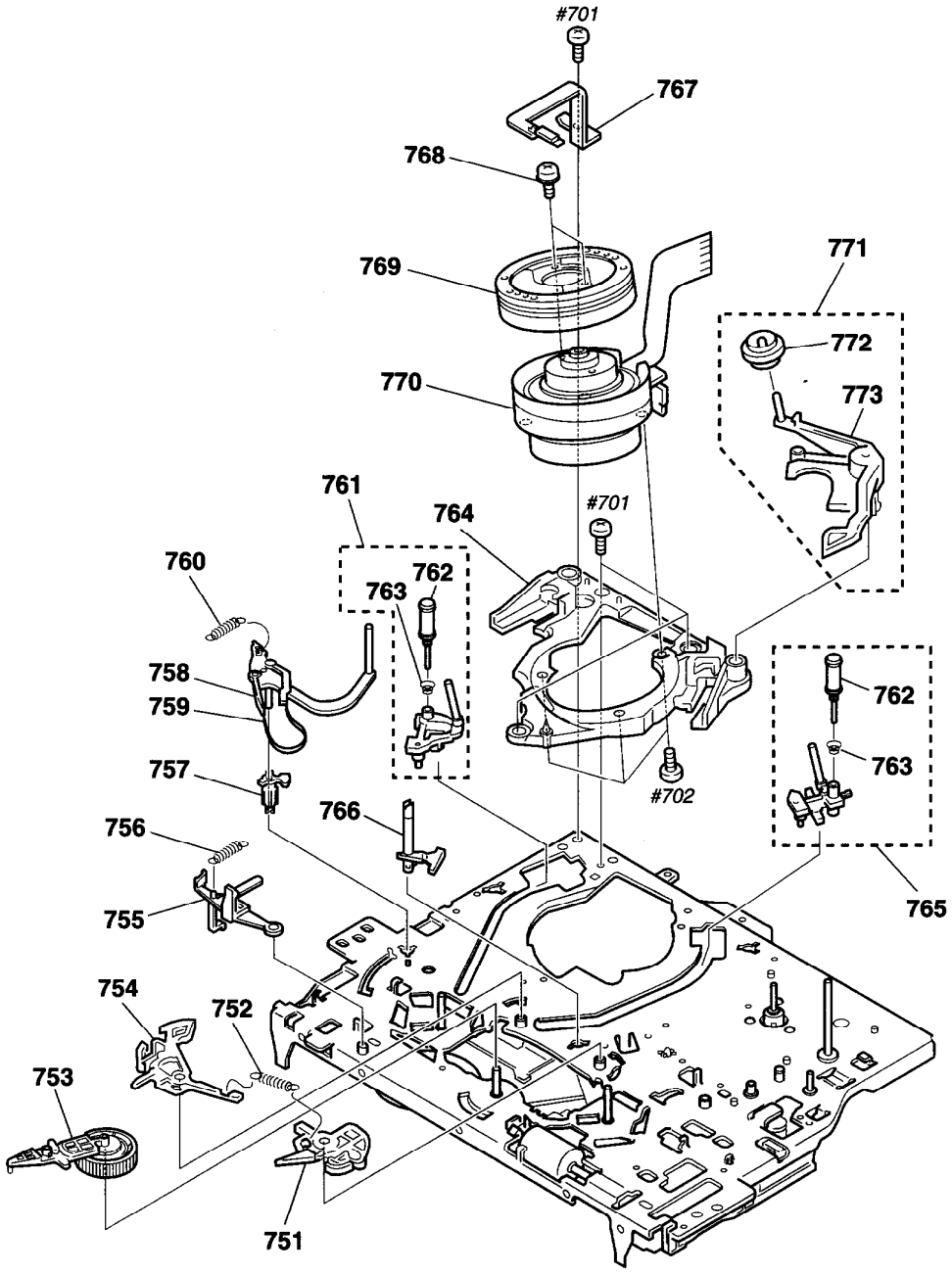
5-1. MECHANISM DECK-1



Ref. No.	Part No.	Description	Remarks
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S) (GRAY)	
703	3-977-508-01	TABLE, REEL (T) (BLACK)	
704	1-500-144-11	HEAD, FE (RECORDER)	
705	3-977-495-01	SHAFT TG2 (RECORDER)	
706	3-977-494-01	HOLDER, FEH (RECORDER)	
707	A-6759-619-A	FL COMPLETE ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS(END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS(TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	

Ref. No.	Part No.	Description	Remarks
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-01	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING,EXTENSION(RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	
722	3-974-556-01	+ HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW	
724	3-978-485-01	PLATE, GUIDE CASSETTE	
725	3-696-519-01	+P IT3 SCREW 3X8	
726	X-3947-817-1	FEH, ASSY (PLAYER)	
727	3-977-443-01	WASHER, STOPPER	

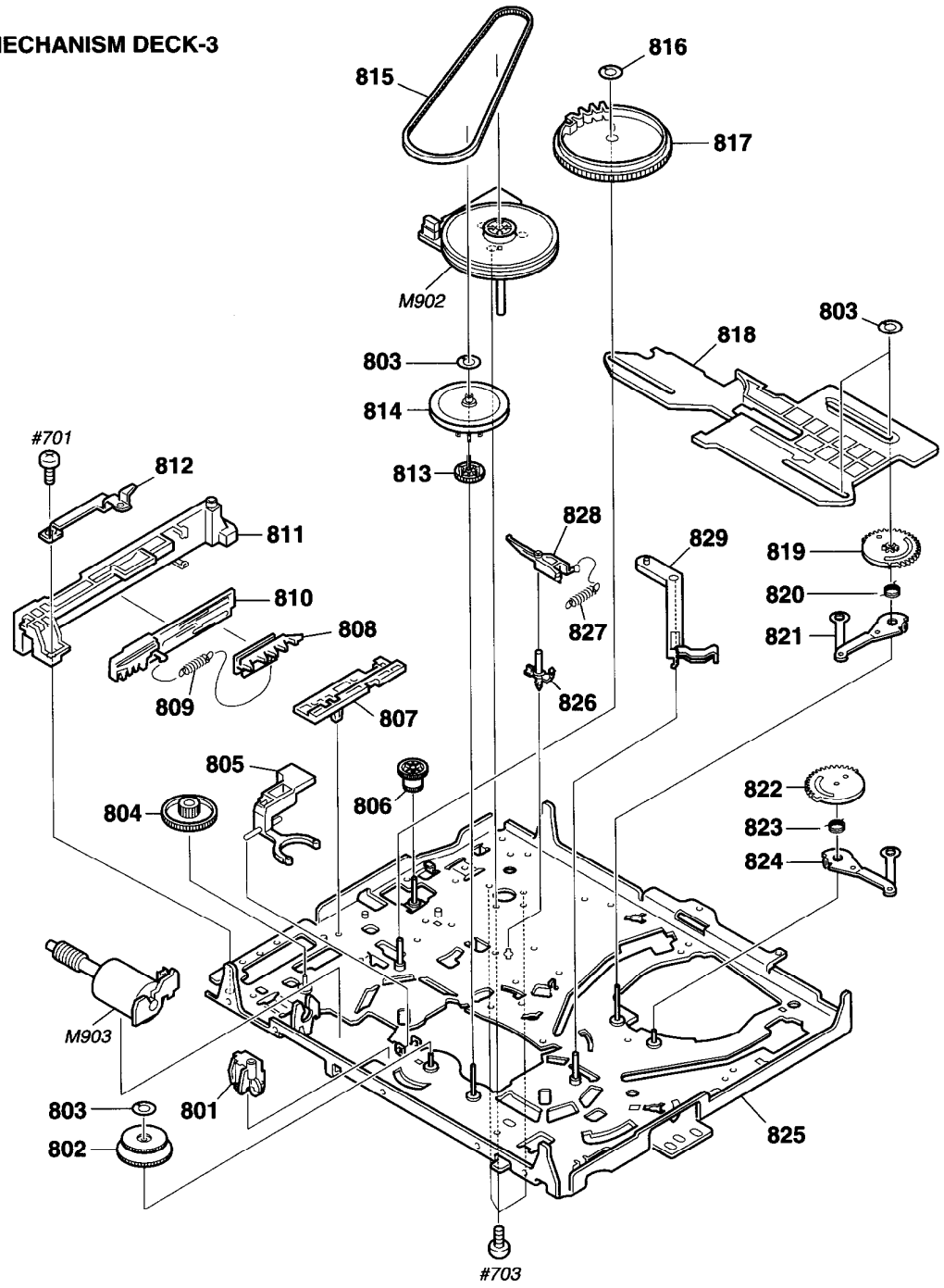
5-2. MECHANISM DECK-2



Ref. No.	Part No.	Description	Remarks
751	X-3947-581-1	BRAKE ASSY,MAIN(T)	
752	3-977-462-01	SPRING,EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-1	BRAKE ASSY, MAIN(S)	
755	3-977-513-01	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3944-378-1	ROLLER ASSY, GUIDE	

Ref. No.	Part No.	Description	Remarks
763	3-965-178-01	SPRING	
764	3-969-629-01	BASE, DRUM	
765	A-6750-325-A	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	X-3943-899-8	GROUND ASSY, SHAFT	
768	2-643-205-01	SCREW	
769	Refer to the service manual for each model.		
770	Refer to the service manual for each model.		
771	A-6759-614-A	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-977-537-01	ARM, HC ROLLER	

5-3. MECHANISM DECK-3



Ref. No.	Part No.	Description	Remarks
* 801	3-977-437-01	RETAINER,CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-01	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	

Ref. No.	Part No.	Description	Remarks
817	3-977-439-01	GEAR, CAM	
818	3-977-442-01	SLIDER	
819	3-977-455-01	GEAR, LOADING(T)	
820	3-977-456-01	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING(T)	
822	3-977-451-01	GEAR, LOADING(S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING(S)	
825	X-3947-576-1	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-01	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
M902	1-698-971-11	MOTOR, DC	
M903	X-3947-577-1	MOTOR ASSY, CAM	

9-921-647-13
(Including 9-921-647-11, -12(81))

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